Paper
TRADE JOURNAL

Oct. 19, 1950

HOW TRAIN PAPER INDUSTRY LEADERS?

WHAT MUST BE CONSIDERED IN PLANNING AN INSULATION AND HARDBOARD MILL?

HOW HAS THE WASTE PAPER INDUSTRY IMPROVED ITS PACKING?

WOOD PULP

G

Established 1886

"The golden age is always before—not behind—us."

EMERSON

The illusion that times that were, are better than times that are, has pervaded all ages, but the industrial history of America gives overwhelming proof to the contrary.

Year by year, and decade by decade, industrial America, and in the vanguard, the Pulp and Paper industry, has gone on to greater and greater achievements.

It is the storms and tempests that teach the pilot and strengthen the fibre of the crew.

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— INCORPORATED —

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DOWNINGTOWN, PA.

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One CURLATOR in one year *Saved* 6,500 CORDS OF PULPWOOD IN A NEWSPRINT MILL

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*T.M. Reg.— Curlator Corporation, Rochester, N. Y.

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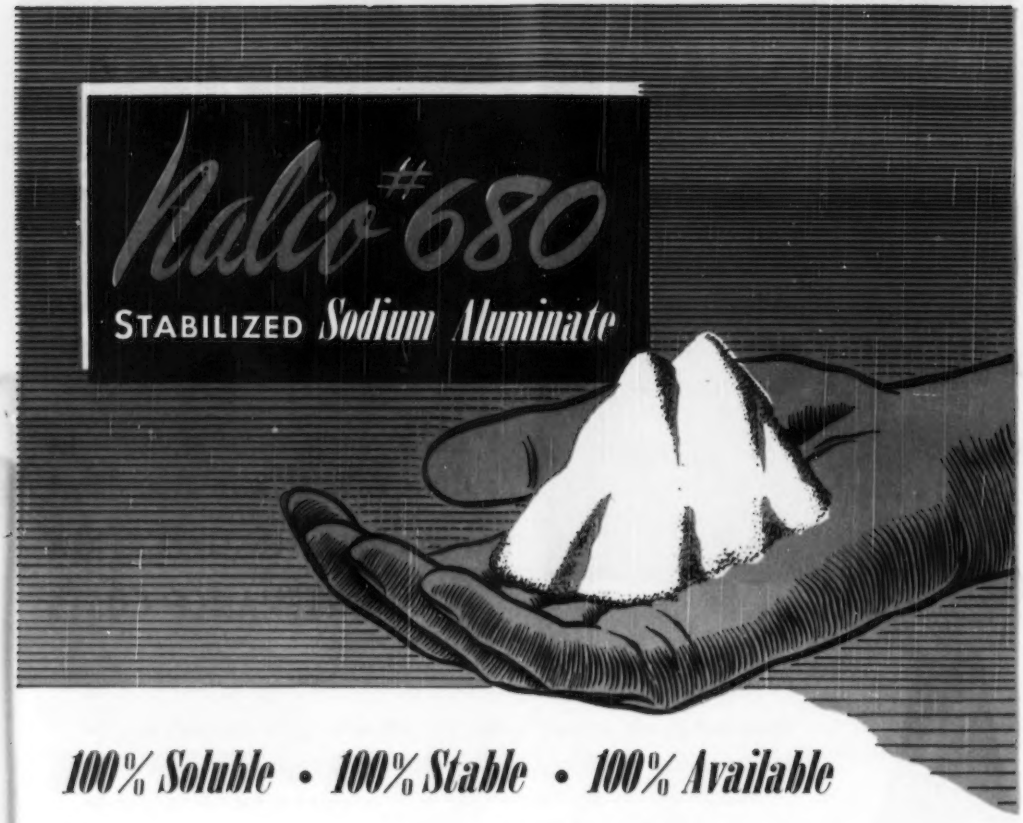

100% Soluble • 100% Stable • 100% Available

NALCO 680 is *completely* soluble, *completely* stable . . . the one sodium aluminate that remains in solution as sodium aluminate and does not settle out.

Every ounce of Nalco 680 provides active alkaline alumina . . . always available for rapid reaction. That means reduced alum requirements, lower acidity, better sizing, better retention, and therefore, better products.

Read the results reported at right — then ask a Nalco Representative to show you how Nalco 680 can repeat them in your mill.

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"Machine tenders report much better sheet formation with Nalco 680, and that jordans can be cut back 10 amps. Machines are cleaner with no deposits on cylinders."

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"Results using Nalco 680 at the rate of 5 pounds per ton have been good. Improved sizing and reduced alum so that 140 pounds of alum is being added per 4500 pounds of furnish, instead of the previous 250 pounds of alum. This enabled the mill to meet rigid pH specifications for the paper."

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"No. 6 paper machine remaining clean and generally good results through the use of Nalco 680 applied at the rate of four pounds per ton into the fan pump suction."

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Canadian inquiries should be addressed to Alchem Limited, Burlington, Ontario

THE Nalco SYSTEM...Serving the Paper Industry through Practical Applied Science

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Paper TRADE JOURNAL

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DATES TO REMEMBER

OCTOBER 23-25: National Paper Trade Assn., Fall Convention, Stevens Hotel, Chicago, Ill.

OCTOBER 25-27: Alkaline Pulping Conference. George Washington Hotel, Jacksonville, Fla.

OCTOBER 30-31 NOVEMBER 1: 37th National Foreign Trade Convention, The Waldorf-Astoria, New York, N. Y.

NOVEMBER 2: Instrument Society of America, Hotel Bellevue-Stratford, Philadelphia, Pa.

NOVEMBER 27—DECEMBER 2: 19th National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, N. Y.

DECEMBER 3-6: American Institute of Chemical Engineers, Neil House and Deshler-Wallick Hotel, Columbus, Ohio.

JANUARY 15-18, 1951: Plant Maintenance Show & Conference, Public Auditorium, Cleveland, Ohio.

THIS WEEK

A brief history, together with a description of present day facilities, of the first Pulp & Paper School in the U. S. is found in "The University of Maine" by Howard A. Keyo.

"Modern Waste Paper Packing" by Colley S. Baker is, as the title indicates, a description of methods of collecting, sorting and packing waste paper for re-use in the manufacture of paper and board.

"Small Plant Set-Up for Insulation and Hardboard Manufacture" by R. T. DePan contains interesting information on one of the lesser known branches of the paper industry.

NEXT WEEK

Use of Lead in the Pulp & Paper Industry by V. P. Edwardes

Infra-Red Heating and Drying by Goeffrey Broughton

Stock Preparation in the Manufacture of Liner Board by W. C. Hayes

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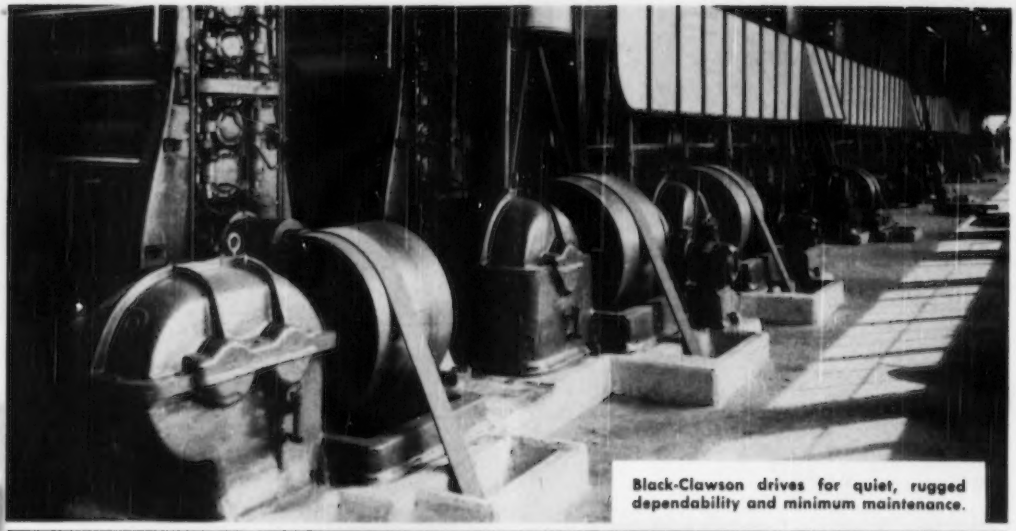
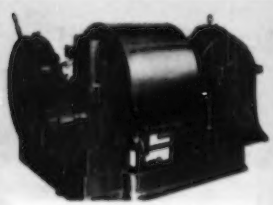
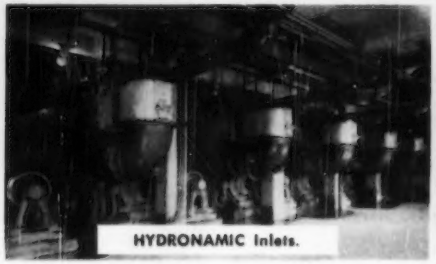


Black-Clawson drives for quiet, rugged dependability and minimum maintenance.



Calender Drive with reversing mechanism.



HYDRONAMIC Inlets.

Air-flex drive control.

Control of the paper machine

Even as the paratrooper yells "Geronimo" when he bales out, the progressive superintendent cries "control" when he plans a new paper machine—control being the most sweeping development in papermaking in recent years.

Black-Clawson cylinder machine and Fourdrinier designs emphasize control from the HYDRONAMIC Inlets on the vats or headbox clear on through to the plug ejector mechanism on the calender drives.

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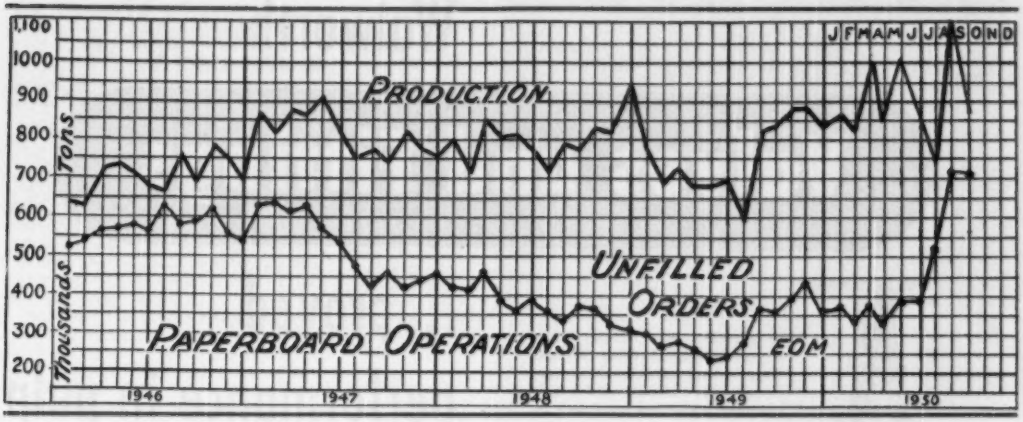
Weekly Brief of Important Figures

OUR BUSINESS



Source	Production	WEEK ENDING Oct. 7, '50	Sept. 9, '50	Oct. 8, '49
APPA	Paper Production percent 6-day Capacity	106.0	84.5	90.5
	Unbl. Kraft Paper Production percent	95.3	74.9	83.4
NPA	Paperboard Operating Ratio percent inch hours	100.0	81.0	92.0
		August 1950	**July 1950**	**August 1949**
APPA	Paper Production* (Except Newsprint and Building Papers) Tons	865,000	715,601	684,243
	New Orders Tons	979,000	916,770	719,898
	Unfilled Orders Tons	863,500	759,755	407,215
	Shipments Tons	873,500	723,040	679,984
		Sept. 1950	**August 1950‡**	**Sept. 1949**
NPA	Paperboard Production Tons	877,945	1,130,242	833,800
	New Orders Tons	872,012	1,365,968	873,002
	Unfilled Orders Tons	714,877	729,058	360,900
	Our Customers Activities Index[1]	**Latest Mo.°**	**Previous Mo.°**	**Year Ago°**
FRS	Manufactures Total Index	206	208	169
	Durable Mfg. Index	237	238	186
	Nondurable Mfg. Index	182	184	156
	Chemical Products Index	256	258	225
	Mfg. Food Products Index	172	164	172
	Printing and Publishing Index	150	169	133
ODC	Magazine Advg.-Printer's Ink Index	316	321	284
	Retail Sales Combined Adjusted Index	352.2	317.2	296.7
	Drug Index	225.3	222.0	233.8
	General Merchandise Group Index	368.7	310.3	285.6
	Grocery and Combination Index	410.9	378.9	358.0
	Prices Index			
BLS	Consumers Price Index[1]	172.5	170.2	168.5
	Wholesale all Commodities[2]	162.9	157.3	153.6
	Wholesale Foods[2]	171.4	162.1	161.3
	Commodities other than Farm Products and Foods[2]	151.5	148.8	145.1
	Wholesale Pulp and Paper[2]	159.1	155.6	156.8
	Purchasing Power of Dollar, Consumers Prices[1]	58.0	58.8	59.3
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	362.2	348.8	315.7
	Unemployment Compensation Initial Claims (M)	971	1,104	1,383
	Miscellaneous Carloadings–Thousands of Cars	1,433	1,846	1,233
	Electric Output (Million KW hr.)	31,626	31,608	27,946
PTJ	Average 32 P & P Common Stocks as of Oct. 10	$34.26	$32.45	$28.69
	Average Indicated Dividends Common Stocks as of Oct. 10	$ 2.43	$ 2.34	$ 2.19

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
* For details see APPA Monthly Statistical Summary—August 1950 Estimated Figures
° Latest Month Available on Request
‡ For Five Weeks

Walworth

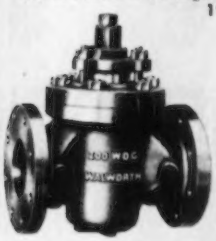
Valves and Fittings

WALWORTH No. 725FS OS&Y, Flanged, Special Alloy Wedge Gate Valves were developed especially for the pulp and paper industry. They are available in sizes from 2 to 12 inches for 200 pounds, and 14 to 24 inches for 150 pounds, non-shock service.

WALWORTH No. 928FS Swing Check Valves are recommended for use with No. 725FS Gate Valves. Like No. 725FS, they are designed to meet fully the requirements of the pulp and paper industry.

WALWORTH No. 716 is an OS&Y, Saddle Style, Wedge Gate Valve having body, bonnet, and wedge of Ni-Resist. The seat rings and stems are of 18-8 stainless steel. These valves are available in sizes ½ to 2", and complement the No. 725FS valves in the smaller sizes.

WALWORTH Pressure-Seal Cast Steel Gate Valves exemplify the greatest improvement in high-pressure, high-temperature valve design. The internal pressure keeps the body-to-bonnet joint tight. Series 600: 1½" and larger; Series 900: 3" and larger; Series 1500: 1" and larger.



WALWORTH No. 1700F Lubricated Plug Valves are available in a variety of materials for corrosive service. They assure long life and positive operation; are wrench or gear operated; have a working pressure of 200 pounds WOG; and are available in sizes from 1" to 8".

...proved performance in pulp and paper mills

For many years the Walworth Company has been producing valves designed for service in the pulp and paper industry. These valves are similar in design to regular, standard iron body gate valves, but, because of the conditions peculiar to the pulp and paper industry, the valves are made of corrosion resistant alloys. Years of satisfactory service have proved these alloy valves to be the most suitable for this special service.

Walworth manufactures valves and pipe fittings of steel, stainless steel, iron, and bronze. Illustrated are Walworth valves of latest design. For further information and details of Walworth's complete line of valves and fittings, see your local Walworth distributor, or write for catalog.

WALWORTH

Pulp and Paper Mill Division

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DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, October 18, 1950.

Market Conditions Induce Caution

Hints in the nation's press that business has become cautious about the immediate future are sustained in paper and allied markets. With becoming caution, the industry is studying buying trends and inventories, current output and order backlogs.

Buying of paper and products continues at unslackened pace, but a shift in pressure is noted. Indications are that consumer stocks are nearing satiety, it is said, and that current buying is to replace printer, merchant and super jobber stocks which were depleted by panic buying.

August Sales and Inventories

In a month of peak demand and rising prices, sales and orders of all manufacturers moved to a point well above previous highs, the OBE reported recently. August sales were more than 10 percent higher than July's, after seasonal adjustment, new orders rose about 15 percent, outrunning sales by about $3.5 billions, and inventories dropped $200 millions in the non-durables group.

For paper and its products, wholesalers' inventories were reported at 1 percent over July 31 level (See Table I), with sales 28 percent ahead. For the 61 U.S. firms reporting, sales totaled $10,534,000 in August, 29 percent over 1949's month. It should be noted that the rise in wholesaler inventories came from the Pacific coast's four establishments. The Middle Atlantic and East North Central, the only other regions where data were sufficient to show, took drops of 4 and 7 percent respectively. Stock to sales ratio for all divisions dropped to 106 from July's 142, with the Middle Atlantic and East North Central standing at 84 vs 118 and 88 vs 129 respectively.

Rising Market Gives Impetus

Impetus to wholesale inventory rebuilding is supplied by the rising prices of paper, boards and products. Mill order backlogs are still building in spite of record production and shipments, with the heaviest gains shown in fine and printing papers. (See Table II.) "Mill sales departments, almost without exception, operate upon a when, as and if basis in respect to delivery and a merry-go-round basis pricewise," said the National Association of Purchasing Agents (NAPA) monthly market review. "Statements, politely phrased, but saying in essence that it will be appreciated if you take this particular piece of business elsewhere, find their way to buyers' desks." Large orders for printing papers go abegging, this columnist finds. "We might be able to place a small order," merchants advise, "but large orders are a dime a dozen."

Concern is being expressed by industry leaders that jobber stocks could build to bulging proportions, particularly now while consumers are drawing their needs from "panic purchases." From the standpoint of national defense, this demand for inventory building is a healthy thing, said an industry spokesman. "It means that our products may be stockpiled for war at the only point where they can be satisfactorily stockpiled, viz., the consumers' warehouses. From the standpoint of the industry, however, it means that we are now in a major inventory cycle, and that the time may come, as it did in 1942, when demand will fall. It was in such a period or readjustment that pulp and paper became officially regarded as unessential and expendable, a reputation which it took the industry a long time to live down."

The consensus is that once the regular pipelines of paper and paperboard distribution have been filled, some slackening of civilian demand must be expected. Requirements of the mobilization program ultimately will take up part of this slack. Opinion is giving way to conviction, however, that a temporary lull may be felt by the industry late in the year and early into 1951. Should inventories get out of line with the industry at capacity operation, this lull could develop into a tailspin.

Industry Bell-Wethers Ease

Bell-wether of the industry, unbleached kraft, showed a slight easing in production for the week ended September 30. Ratio of production to potential mill capacity was reported at 95.3 percent for the week, compared with 98.6 for the preceding week. Paperboard production for the week ended October 7 moved back to 100 percent of rated capacity from 103 percent of the preceding week.

Newsprint in Price Rise

Announcement that two Canadian mills have lifted the newsprint price by $10 has stimulated new Congressional gripes. Anti-trust action is threatened should U. S. mills also lift their price.

TABLE I

Paper and Its Products

WHOLESALERS' SALES AND INVENTORIES, BY GEOGRAPHIC DIVISION
AUGUST 1950

	Sales: Percent change			Sales: August 1950 panel		Inventory end-of-month (at cost): Percent change		Inventory end-of-month (at cost): August 1950 panel		Stock sales[a] ratios		
	August, 1950 from August, 1949	August, 1950 from July, 1950	8 mos. 1950 from 8 mos. 1949[b]	No. of establishments reporting	Reported dollar values (add 000)	August, 1950 from August, 1949	August, 1950 from July, 1950	No. of establishments reporting	Reported dollar values (add 000)	August, 1950	August, 1949	July, 1950
Total	+29	+28	+11	61	10,534	+4	+1	36	7,200	106	132	142
New England	+22	+18	+5	4	309	c	c	c	c	c	c	c
Middle Atlantic	+41	+37	+18	18	2,703	+8	—4	11	1,394	84	108	118
E. North Cent'l	+29	+20	+12	18	4,032	0	—7	12	2,452	88	120	129
W. North Cent'l	+39	+21	+9	4	417	c	c	c	c	c	c	c
South Atlantic	+51	+27	+12	7	896	c	c	c	c	c	c	c
Pacific	+5	+36	—8	6	1,525	+7	+14	4	1,758	147	138	178

[a] Stock-sales ratios are percentages derived by dividing stocks, at cost, by total sales (including any direct shipments and consignment business) for an identical group of firms reporting inventories in conjunction with sales.
[b] Includes reports received too late for inclusion in previous monthly trends.
[c] Insufficient data to show separately.

Paperboard Production (Tons)*

	Oct. 7 1950	Sept. 30 1950	Oct. 8 1949
Production	231,663	236,422	201,544
New Orders	281,869	253,120	282,832
Unfilled Orders	763,679	714,877	440,721

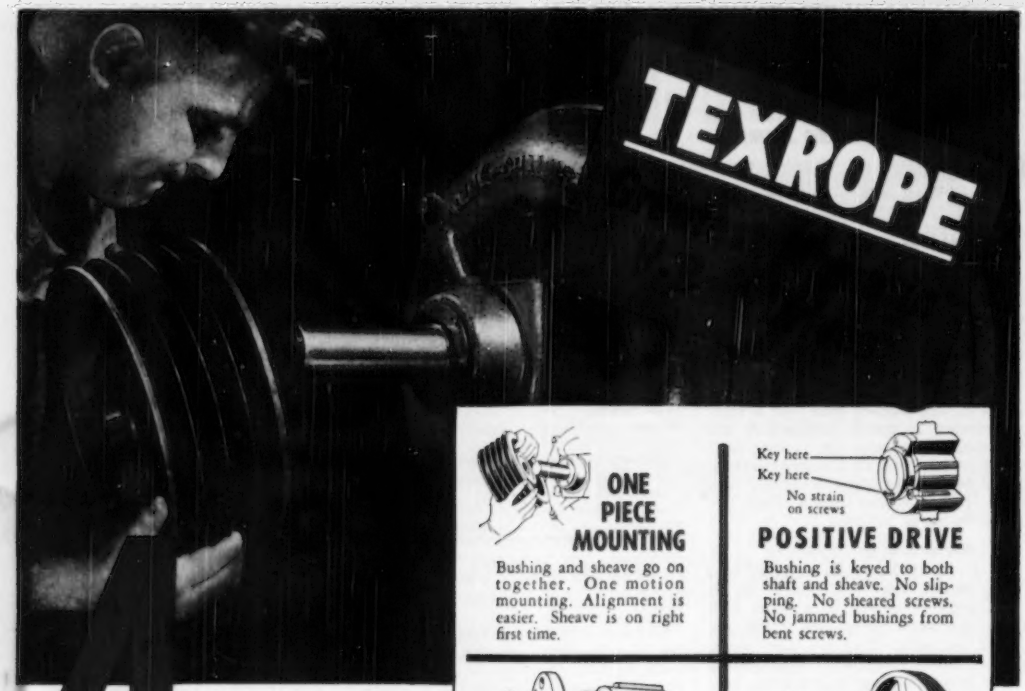
Source: NPA.

TABLE II

August Paper Production

	Production Tons	% Changes in Daily Av. Production: August 1950* Compared with July 1950	August 1950 Compared with August 1949
A. Printing Papers	295,000	+14.5	+19.0
B. Fine Papers	107,000	+20.5	+24.2
C. Coarse Papers	297,000	+ 6.7	+31.8
D. Tissue Papers	127,000	+12.2	+33.8
E. Miscellaneous Papers	37,000	+12.1	+30.7
F. Total, Groups A to E	865,000	+11.9	+26.4

Source: APPA.
* August, 1950 had two more working days than July, 1950 and the same number as August, 1950.



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Bushing and sheave go on together. One motion mounting. Alignment is easier. Sheave is on right first time.

POSITIVE DRIVE

Bushing is keyed to both shaft and sheave. No slipping. No sheared screws. No jammed bushings from bent screws.

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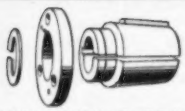
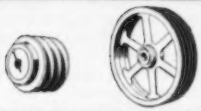


FULL CIRCLE GRIP

Bushing split full length with separate collar. Grips shaft full length around full diameter. No forcing or distortion. Grip easily broken. No hammering.



WIDE SIZE RANGE

Magic Grip sheaves are available from 3" pitch diameter up. Style NC bushing for smaller sizes and Style C bushing for larger sizes.

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YOU CAN MOUNT a *Magic Grip* sheave faster than any other sheave you can buy . . . and demount it just as fast. When you mount a *Magic Grip* sheave it runs true. It will not slip or jam. It always comes off easily.

Even if you don't change sheaves often, you should have *Magic Grip* sheaves on every drive to eliminate the possibility of shaft and bearing damage when ordinary sheaves are hammered or pried on or off.

WIDEST V-BELT LINE

Get everything you need for your V-belt drives from one reliable source. *Texrope* offers the broadest line of V-belts, standard and variable speed sheaves and speed changers in the industry. And you also get the extra engineering skill that comes from having more industrial V-belt installations than any other manufacturer.

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CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.

PUMPS — Integral motor and coupled types from ¾ in. to 72 in. discharge and up.

ALLIS-CHALMERS

News of the Week

POWELL EXPANSION PLANS

Expenditure of $11 million during the next three years in a further development program has been announced by the Powell River Co.

Already started are a $2 million wharf, sawmill renovation, and acid plant modernization and expansion.

In the contract stage are a new 13-mile steel-tower double transmission line from Stillwater; an eighth high-pressure steam boiler; a new 10,000-KW turbo-generator; a third ring-type hydraulic barker; extension of groundwork and screen room buildings, and installation of synchronized drives to boost speed of No. 5 and No. 6 paper-making machines from 1100 to 1475 feet per minute.

The double transmission line will prevent complete plant shutdown in the event of line failures.

Provisional contracts have been let for new chip storage bins to eliminate bottlenecks in supply of chipped wood for the acid pulp process, and for overhaul of the mill electrical distribution system.

Last spring Harold S. Foley, president, announced plans for development that would increase present top capacity of the plant from 1000 tons daily by 40,000 tons per year, in an effort to meet increasing demand for high-quality Powell River newsprint.

"We are starting that development now," said Russell M. Cooper, resident manager at Powell River. He pointed out the present development is one of modernization and security of production.

Modernization plans for the mill's electrical distribution system will divide the load among at least five units, so that a unit will be available to continue operation of most mill facilities during emergency shutdowns.

New absorption tower facilities to be put into operation within the next six months will reduce or eliminate strong sulphurous fumes released in the acid-cooking process.

Contract for the new wharf, first on the Canadian west coast to use British steel pilings, has been let to Northern Construction Co. Steel power line towers will be erected by C. H. E. Williams Co.; access and service roads for this line through the wilderness will be built by Gresty Bros., a Powell River contractor.

E. D. Bickerton has the contract for structural steel erection for the sawmill renovation, which includes a new log haul, new carriage, and transfer decks.

Northern Construction Co. is already at preliminary work on the wharf, which will offer berthing facilities for the largest of deep-sea freighters. Steel piling is due to leave England immediately for Powell River.

Western Bridge has a provisional contract for new chip storage steelwork.

RETURN TO PRIVATE INDUSTRY

SAN JUAN, P. R.—The Puerto Rican government has announced the sale of all four of its industrial plants to a Puerto Rican firm.

Teodoro Mosco, president of the Insular Development Administration, said this marks "the end of the government conducting its own industries and from now on the administration will conduct all efforts to help private enterprise develop its own private industries."

The four plants were sold to Ferre Industries of Ponce, Puerto Rico, which bid higher than an unidentified American company. Among the four was a paper mill.

CENTRAL'S SETTLING BASIN

MUSKEGON, Mich.—The Central Paper Co., Muskegon, has put into operation a new settling basin and a weir to eliminate pollution of Muskegon Lake.

The settling basin has a capacity of 350,000 cubic feet; the weir effects better means of control by enabling the firm to measure the volume of solids entering waste discharges. Vacuum filters have also been placed in operation within the plant to reduce the amount of solids leaving the plant in discharge spillways.

E. A. Charlton is executive vice-president of the company.

STREAM IMPROVEMENT

GREEN BAY, Wis. — The Northern Paper Mills is installing equipment at its sulphite mills to reduce pollution of the Fox river. It is estimated that the new machinery will eliminate two-thirds of the wash water used to rinse pulp after bleaching that previously flowed into the river. The water will be recirculated and reused.

NEW FABRICON PLANT

Fabricon Products, Inc., with headquarters in River Rouge, Mich., announce that construction of a subsidiary plant in Los Angeles, Calif., is well under way. Other subsidiary plants are located at Cleveland, Ohio; Pittsburgh and Philadelphia, Pa.; and Bridgeport, Conn.

EDWARD T. GARDNER

President, general manager and a director of The Gardner Board & Carton Co. with plants in Middletown, Ohio and Lockland, Ohio, is the only living co-founder of the present company whose golden jubilee in business is being observed.

CELEBRATE GOLDEN JUBILEE

LOCKLAND, Ohio — The Gardner Board & Carton Co. currently observing its golden jubilee in business as manufacturers and fabricators of paper board and containers opened another chapter in its 50-year growth October 18 with a corner-stone laying ceremonial at the site of the company's new Retail Box plant in Lockland.

Formal observance of the golden jubilee anniversary scheduled for the month of November at the Gardner organization's mills and general offices in Middletown as well as at the Lockland operations will be accompanied by commemorative plant visitations and celebrations, the management disclosed.

The new Gardner Box Plant at Lockland is in course of construction on a site directly opposite the grounds of the present plant and offices of the company's board, carton and mill operations. The new building, measuring 447 by 282 feet, containing 120,000 square feet of floor space and with equipment representing an investment well in excess of $1 million will have the most modern architectural and functional design for industrial operations.

As soon as the new Retail Box plant is completed, the Gardner management said there will be expansion of the company's Folding Carton department operations at Lockland, by using production space made available by the removal of the box fabrications to the new plant area.

POWELL RIVER PRICE RISE

OTTAWA — The action of the giant Powell River Pulp and Paper Co., Ltd., of Vancouver, B. C., in raising the price of newsprint for both United States and Canadian customers by about $10 a ton has aroused much speculation as to whether or not this may be the forerunner of similar price increases by other Canadian companies. It is known that some consideration has been given to establishing a better balance between current prices and costs of production, and that both Eastern and Western Canadian companies have been probing the price of newsprint for the past several weeks.

When the Canadian Government announced the freeing of the dollar, Canadian newsprint producers immediately lost heavily by the drop in exchange rate, receiving between 4 and 5 cent premium instead of the previous 10 cents. However, it is emphasized that a price increase was under consideration by some companies even before the exchange loss had taken place. In other words, higher newsprint prices cannot be attributed solely or principally to the devaluation of the Canadian dollar but rather to the rising costs of production, including cost of raw materials, labor, freight, etc.

Consequently, trade circles in Canada are not surprised at this new price boost for newsprint, though some surprise has been expressed that this higher price level was initiated by a western company rather than an eastern firm since the latter generally led the way in setting such prices in the past.

Another point raised is that the Powell River Pulp and Paper Co., Ltd., is the largest producer of newsprint in the western territory and last year produced an all-time high of 319,681 tons of newsprint and sulphite pulp, with newsprint sales totaling 283,347 tons in 1949 compared with 244,834 in preceding year. It is believed that other firms may gradually and, perhaps, in varying degrees, adjust their prices upwards, too. This may not be necessarily due to the action by Powell River Pulp and Paper Co., which merely happened to be the first to make the announcement of an increase. Others have been looking into the price angle for some time but they have not made their decisions known as yet.

This increase does not necessarily mean a general boost will come soon throughout the industry, but there is a belief that, when larger firms like Powell River start raising prices, it is usually a forerunner of such action. The "no comment" sign is out on prices and thus far the Powell River Pulp and Paper Co. price boost has brought in its wake a wave of speculation which is being reflected in an advance in paper stocks and a more active market.

FLAMBEAU INSTALLS SAVEALL

PARK FALLS, Wis. — The Flambeau Paper Div. of the Kansas City Star Co. completed the installation and started operating a Sveen Pederson Saveall to clarify its paper mill white water effluent. The Saveall is housed in a new brick and steel structure, erected for that purpose. The recovered solids from this Saveall are returned directly to the fan pump of the paper machine with provision being made for an overflow going to the machine chest if necessary. The clarified water from this Saveall will be used for showers around the paper machines with any excess being returned to the pulp mill for washing purposes. Clarified water contains an average of about 0.2 pounds of solids per thousand gallons, of which about half is filler material.

The white water is presently being collected from one paper machine only, but it is planned to make the proper piping connections to clarify the white water from both paper machines in the near future. Since the machines are equipped with couch pits to take care of machine breaks and ribbons, it apparently is not necessary to have a filtering type Saveall between the paper machine and the new Sveen Pederson Saveall. Good efficiency has been achieved right from the start of operations.

CANADA'S DUTY ON CARTONS

OTTAWA—No official comment has been made so far regarding the complaints that the 20 percent duty recently imposed on some types of cartons entering Canada threaten to increase the price of many Canadian-made goods.

H. C. McKendrick, of Toronto, executive secretary of the Canadian Importers and Traders Assn., has supported the view that the 20 percent import duty on such cartons is a threat to prices. He has gone on record as saying that importers feel that the regulation could be stretched to apply to almost any type of carton so that, if it became widespread, all sorts of Canadian-made goods would go up in price.

TO BE RATED FOR PRIORITY

Quartermaster Corps purchasing installations are authorized to apply priority ratings in certain existing and future contracts for supply of Quartermaster items, they have been advised by Major General Herman Feldman, The Quartermaster General.

Special "DO" (Defense Order) symbols have been assigned to various items of Quartermaster supply under authority of National Production Authority Regulation No. 2, dated October 3, and this rating may be assigned to contracts by The Quartermaster purchasing agencies.

Use of the "DO" symbol under the priority system will be of value, Quartermaster Purchasing Officers pointed out, in permitting contractors holding contracts so designated to obtain raw materials and components necessary in fabricating the items of Quartermaster procurement.

Under the directive from The Quartermaster General, Quartermaster Purchasing Offices are authorized to use the following certification on contracts and orders: "By authority of the National Production Authority, rating "DO" (two-diget program code) is assigned to the deliveries on this purchase order or contract." This certification shall be authenticated with the signature of an authorized official of the Department of the Army.

The use of the authority is delegated to The Quartermaster General and is subject to such conditions as may be imposed by the National Production Authority, and/or the Munitions Board, and/or the Department of the Army on use, records and reports.

Quartermaster purchasing agencies to whose commanding officers the authorization to apply priority ratings has been delegated include the New York Quartermaster Procurement Agency, Oakland Quartermaster Procurement Agency, Chicago Quartermaster Depot, Philadelphia Quartermaster Depot, Jeffersonville Quartermaster Depot, Columbus General Depot, and other installations with a purchasing mission.

CRYSTAL TISSUE ADDITION

MIDDLETOWN, Ohio — E. E. Grant, president of The Crystal Tissue Co., Middletown, Ohio recently announced that work has started on a modern, one story addition to the company's plant.

The building will be constructed of steel, brick and concrete and will be approximately 115 feet long and 120 feet wide.

McGEORGE JOINS ROCHESTER

ROCHESTER, Mich.—J. F. McGeorge, formerly mill superintendent of the Albemarle Paper Co., has been made mill manager and vice-president in charge of production of the Rochester Paper Co.

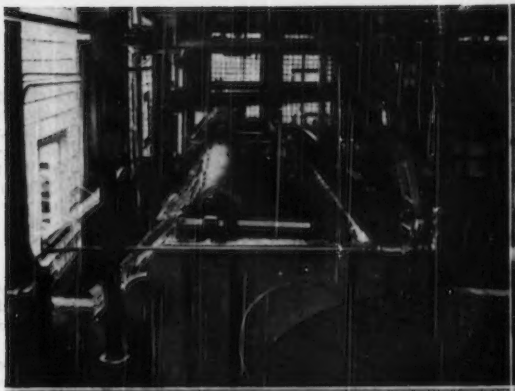
TAYLOR ALEXANDER RESIGNS

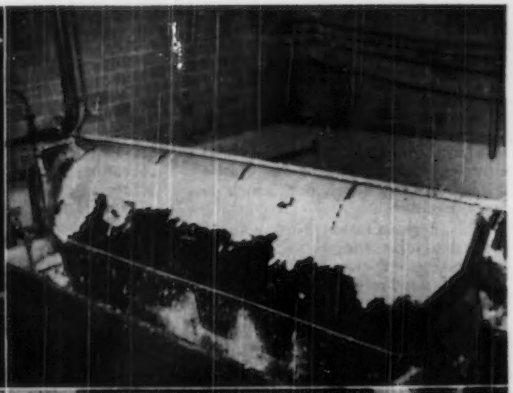
PORTLAND, Ore. — Taylor Alexander has announced that effective October 1st he resigned as director and vice-president of the Oregon Pulp and Paper Co. and affiliated companies and the Columbia River Paper Mills and affiliated companies where he was in charge of all logging and lumber operations and had been employed for the past 25 years.

His plans for the future are not definite.

HEADS HUDSON PAPER CO.

VANCOUVER, B.C.—Frank W. Thornhill has been appointed president and general manager of the Hudson Paper Co. Ltd., a subsidiary of Pacific Mills Ltd.





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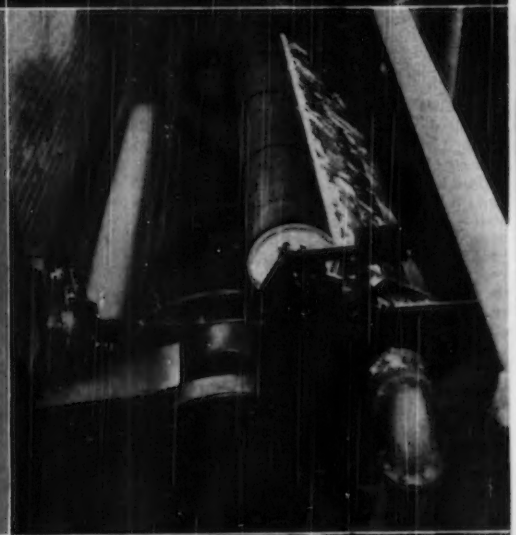
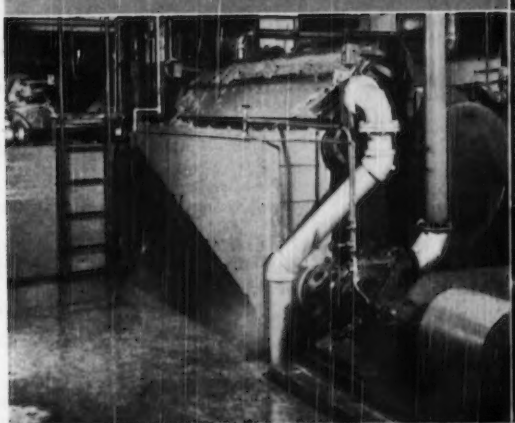
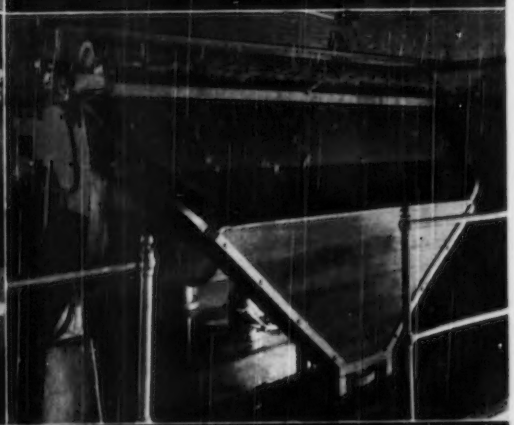
is the time to turn all those good, expensive fibres into good, salable paper instead of letting a lot of them go to waste for lack of an adequate, efficient, dependable recovery system.

Now is the time to look into

BIRD SAVE-ALLS







BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

SULPHITE LIQUOR AS FUEL

NIAGARA, Wis. — Twenty-eight top technical men of the Wisconsin paper industry gathered here October 18 to see sulphite liquor burned experimentally as industrial fuel. If these and other experiments prove successful, it is expected that a number of mills may adopt this method for disposing of sulphite liquor which now goes into streams.

The demonstration test was conducted at the Niagara mill here by combustion experts of the technical staff of Kimberly-Clark Corp., in the presence of technical directors, engineers, and scientists of twelve other mills which have the problem of disposing of spent sulphite liquor. Also present were representatives of the Sulphite Pulp Manufacturers' Research League, Inc., the organization through which Wisconsin sulphite companies carry on their scientific and engineering studies to find and improve ways for reducing sulphite pollution.

Preliminary tests were held at Kimberly-Clark's Niagara (Wisconsin) mill about two months ago, using 6,000 gallons of sulphite mill effluent which had been concentrated to 52 percent solids content. That test turned out unsatisfactorily, and pointed out the need for some changes of techniques, which have since given evidence that they should overcome the earlier difficulties. These tests will finish up 16,000 gallons of similarly concentrated waste material. The Appleton pilot evaporator plant of the Research League evaporated 105,000 gallons of spent liquor to produce this quantity of the material for burning as fuel.

MEAD INCREASES WAGES

HARRIMAN, Tenn. — Approximately 200 employes of the Harrison division of Mead Corp. last week received a general pay increase of 7 cents per hour for all hourly rated employes.

RAYONIER CHANGES

PORT ANGELES, Wash. — President Edward Bartsch, resident manager of the Port Angeles division of Rayonier, Inc., announced on October 5 that Harry A. Thurlow has been promoted to the position of assistant resident manager of the division. Mr. Thurlow joined the Rayonier organization in 1935 at the Grays Harbor, Wash., division. In 1944 he was transferred to Port Angeles as assistant resident engineer. In 1945 he became resident engineer.

Bryan L. Rauschert, who joined the Port Angeles division of Rayonier, Inc., in 1945, has been promoted from assistant resident engineer to resident engineer.

Donald E. Lawson, pulp mill shift superintendent, has been promoted to assistant resident engineer. Lawson joined the Port Angeles division in 1937.

GARDNER PROMOTIONS

MIDDLETOWN, Ohio — Colin Gardner III, vice-president, operations, of the Gardner Board and Carton Co., has announced three appointments in the manufacturing organization. Named to new posts were: Charles K. Pigman as supervisor of planning, Middletown operations; Edward W. Rathbun as acting superintendent; and John Blust as acting assistant superintendent of the company's Middletown Carton Plant. The changes are effective immediately.

CHAMPION PROMOTIONS

HAMILTON, Ohio—John Zimmerman, Hamilton mill manager for the Champion Paper and Fibre Company, announces promotions for Earl Jones and John Ramsey, Mr. Jones becomes production manager and Mr. Ramsey general superintendent of paper manufacturing.

Both have been serving in the production field, Mr. Jones as superintendent of paper manufacturing, processing, finishing, shipping, unloading and storage of raw materials, and Mr. Ramsey as supervisor in machine and beater rooms, unloading and storage, the old paper system and chemical building functions.

CALABRESE JOINS MONODON

William J. Calabrese, formerly buyer of fine and printing papers for the New York Quartermaster Procurement Agency, 111 East 16th street, has accepted a position as vice-president of Monodon Corp., 347 Madison Avenue, New York City. His duties will include all domestic and Government sales along with procurement of paper and other supplies for both the export and domestic markets.

B & P WAREHOUSE

ST. LOUIS, Mo. — Bermingham and Prosser Co., paper distributors, will occupy a new warehouse and office building now being completed for them at 601 South Edwin. Modern mechanical equipment will be installed to improve the efficiency of the cutting and handling of paper. When finished in the spring of 1951 the firm will consolidate operations now conducted in several locations. Cost of the installation will be approximately $250,000.

GARDNER TRANSFERS BRUMLEY

MIDDLETOWN, Ohio. — The Gardner Board and Carton Co. today announced the transfer of Frank K. Brumley from sales representative at the firm's Chicago office to tri-state area representative in the newly created sales territory of southern and western Ohio, eastern Indiana and lower Michigan. He will make his new headquarters at Gardner's home office in Middletown. At the same time C. Hammond Avery, carton sales manager announced the appointment of Kenneth E. Dunn to Chicago as sales representative.

ASSOCIATIONS

NPTA PARTIAL PROGRAM

The speakers for the Joint Meeting open to manufacturers and guests, as well as the Fine and Wrapping Paper Sessions at the convention of the National Paper Trade Assn. to be held at the Stevens Hotel, Chicago, October 23-25 are as follows:

Joint Meeting— 10:00 A.M. October 24th

1. George H. Mead, Honorary Chairman of the Board of The Mead Corp. and member of the Economic Advisory Council to Mr. Symington.
2. Harold E. Holman, Chief of the Forest Products Bureau of the National Production Authority.

Fine Paper Session— 2:30 P.M. October 24th

1. Morris C. Dobrow, Secretary of the Writing Paper Manufacturers Assn.
2. Harold Holden, vice-president in charge of sales, Oxford Paper Co.

Wrapping Paper Session— 10:00 A.M. October 25th

1. Joseph M. Arndt, vice-president and director of sales, Gaylord Container Corp., St. Louis.
2. G. E. Selander, sales manager, Piasa Paper Supplies Co., Alton, Ill.

We are fortunate in securing the above speakers to bring us their views on current problems facing the paper merchant and bespeak for them your prompt attendance at these meetings.

NAWMD FALL MEETING

ATLANTIC CITY, N. J. — With a record-breaking 750 in attendance, the annual fall meeting of the National Assn. of Waste Material Dealers, Inc., recently held in the Hotel Traymore proved significant in the various commodity fields in which the association is interested.

A review of the fall meeting's accomplishments indicates the following highlights:

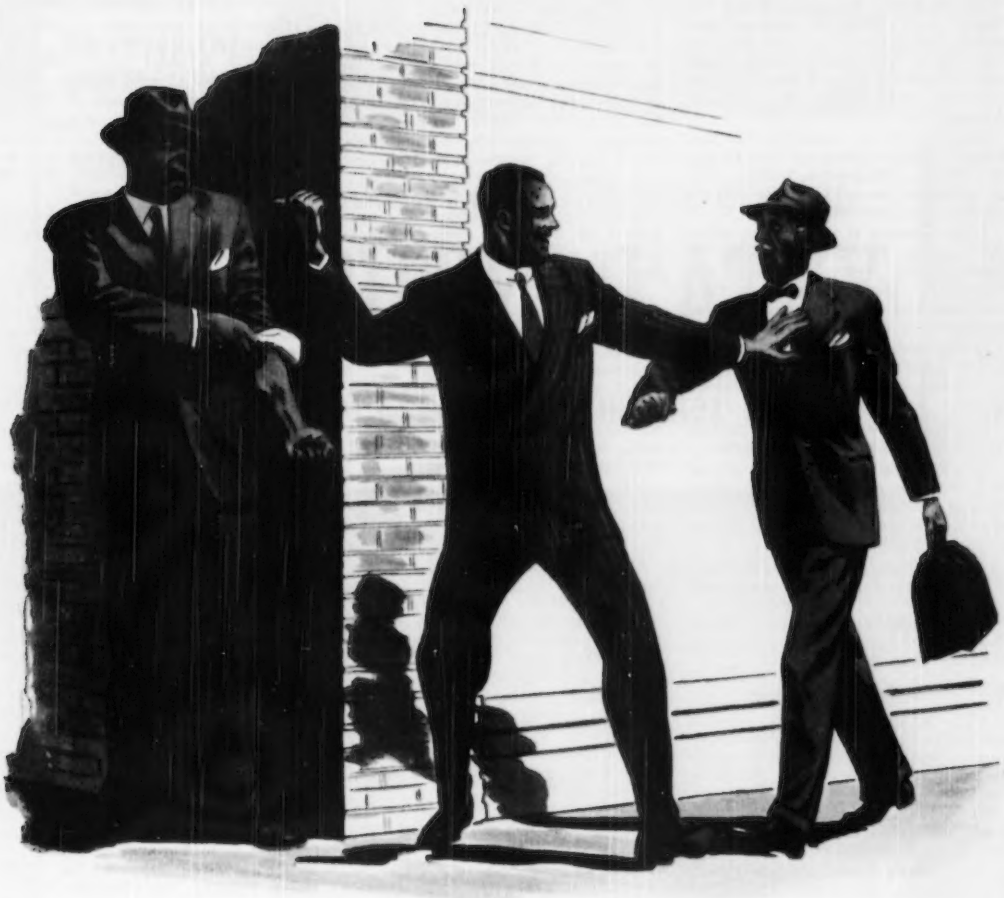
1. New cotton rag specifications, effective October 1, were adopted by the Cotton Rag Council.

2. The Wool Stock Institute adopted new specifications for new and used wool rags, effective November 1.

3. The Waste Paper Institute voted for its executive committee to embark on a research program that would utilize mixed paper.

4. The metal dealers heard that to continue the flow of scrap metals work should start immediately on the extension of the tariff suspension, which was passed recently by Congress and which will be in effect until June 30, 1951.

Each of the business sessions was well attended, with the combined metal gathering attracting 125, and the waste



So your competitors sneak up and clip you!

They'll do it every time, when senile machines threaten to give up the ghost and botch up production schedules. Why stand for it? Send for a Moore & White trouble-shooter and your jinx goes out the window.

He knows the delicate profit-balance between breakdowns and break-even. No matter who made that intractable equipment, he'll engineer new vim into it—won't presume to suggest Moore & White replacements unless he's convinced that it is beyond salvation. Won't attempt to run up a sickening bill on you, either.

Deep down, he knows that new Moore & White machines would do a better job for you—up your profits—and we wish you'd encourage him to expand upon this theme. He'll tell you that it will take little more time to get customized Moore & White equipment off the drafting board, through the shop, and into your plant than may be needed to coax the bugs out of your present machines.

Whatever the size or nature of your problem, deed your dilemma to Moore & White. Our sales engineers know what's to be done about it, and they'll do it.

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paper session drawing 100, and Cotton Rag Council, 50.

The opening luncheon, which attracted more than 500 members and guests, was presided over by M. Helbein, North American Smelting Corp., and Edwin I. Orr, Pioneer Paper Stock Co., co-chairmen, both of Philadelphia, Pa.

Because of the inability of Sen. Robert C. Hendrickson, of New Jersey, to fulfill his engagement because of a governmental assignment, copies of his speech were distributed.

Main speakers at the opening event were James T. Flannery, James T. Flannery Co., Jersey City, N. J., and Clinton M. White, New York City, president and managing director, respectively, of the organization.

During the afternoon the combined metals meeting was held, as were the Cotton Rag Council and Scrap Rubber Institute sessions.

N.A.W.M.D. was host at a cocktail party to conclude Friday's program.

Saturday morning's activities started with a board of directors breakfast-meeting, which was followed by sessions of the Waste Paper Institute and Wool Stock Institute.

Area division officers met at luncheon Saturday in the concluding business session of the fall meeting.

The closing event was a formal dinner-dance Saturday night, which included a floor show.

New Cotton Rag Specifications

The Cotton Rag Council adopted, after approval by Writing Paper Mfg. Assn., these new specifications covering important grades to the paper industry.

NO. 1 WHITE SHIRT CUTTINGS AND/OR BLEACHED WHITE DUCK CUTTINGS.—Table cuttings of white shirts, b.v.d.'s, bleached twill, drill or duck materials, accumulated from shirt factories or other garment factories, free of color, starched or loaded materials and lawns.

NO. 1 UNBLEACHED MUSLIN CUTTINGS.—Table cuttings of unbleached sheeting of drill or twill or muslin construction; the packing must be free of colored selvages, starched or loaded cuttings, canton flannel glove cuttings, heavily shived materials, heavy canvas, osnaburgs and thrums.

BLEACHED CANTON FLANNEL CUTTINGS AND/OR HEADINGS.—Table cuttings of bleached canton flannel or flannelette linings and/or headings which must be free of silk, black threads and glove cuttings.

NO. 1 LIGHT SILESIAS.—Table cuttings of linings from men's clothing, but which must be free of black threads, heavily starched or loaded materials and dark colors.

NO. 1 LIGHT FLANNELETTES.—Flannelette table cuttings, free of bathrobe cuttings, wool shoddy materials, Kasha cloth and dark or unbleachable materials.

NO. 1 LIGHT PRINTS.—Printed table cuttings of ladies' garments: the packing may contain pastel solid colors but must be free of woven materials.

NO. 1 WHITE-BACKED OR EXPRESS-STRIPED BLUE OVERALL CUTTINGS.—Table cuttings of white-backed blue overall materials or blue overall materials with express-stripes. The packing must be free of colored threads and thrums. They must be bleachable.

NO. 1 BLUE OVERALL CUTTINGS.—Table cutting of white-backed, express-striped or bleachable blue overall materials, free of colored threads and thrums.

FANCY SHIRT CUTTINGS.—Table cuttings of woven and printed cotton materials accumulated from shirt factories.

NO. 1 WASHABLES.—Colored cuttings in print or solid colors. Woven materials may be included.

SUN TAN KHAKI CUTTINGS.—Table cuttings from pants and shirting materials of sun tan shades.

MIXED KHAKI CUTTINGS.—Table cuttings of any and all shades of khaki cuttings but must be free of treated materials.

CORDUROY CUTTINGS.—Table cuttings of all work garments or similar materials of all colors, free of unions.

COTTONADES.—Table cuttings of all work garments or similar materials of all colors, free of unions.

BLEACHED UNDERWEAR CUTTERS (FREE OF FLEECE-LINED CUTTERS).—Table cuttings of bleached underwear, free of fleece-lined cutters, trimmings, noodles, seamers, and synthetic materials.

UNBLEACHED OR EGYPTIAN UNDERWEAR CUTTERS (FREE OF FLEECE-LINED CUTTERS).—Table cuttings of unbleached underwear, free of fleece-lined cutters, trimmings, noodles, seamers and synthetic materials.

MIXED WHITES.—Should contain at least 40 percent of No. 1 Whites and not more than 60 percent of No. 2 Whites. They must not contain any of the material prohibited in the grades of which they are composed.

THIRDS AND BLUES (REPACKED).—The same rags as Twos and Blues (repacked), except that the whites may be eliminated.

MIXED COTTON PANTS AND OVERALLS.—Shall consist of all cotton garments free of oil, grease, paint and miner's garments. Must not contain strips, skeleton garments, rayon, wool or silk.

The full official classification may be obtained from National Association of Waste Material Dealers, Inc., 1109 Times Building, New York 18, N. Y.

Possibilities of Research in Papermaking Supplies*

Abstract of an address by Dr. E. C. Jahn[1]

Organized research is relatively new to the ancient art of papermaking. Most strides have been made in the development of machinery and equipment, in new pulping processes, in the adaption of new fiber sources to papermaking (such as hardwoods, etc.) and in the modification of paper for new uses. Research in new uses is very active and the combination of other materials with paper has expanded the paper market. Paper-plastics combinations are among the most important, resulting in vapor, water, and oil resistant papers, shoe materials, simulated leather products, electrical insulation, panels, table tops and many other articles.

The shortage of suitable papermaking fibers, particularly in the northeastern and lake state areas, has led to intensive research on other wood and plant sources for papermaking fibers. This, in turn, involves the development of new processes in an attempt to obtain the desired fiber qualities. In the attempt to develop and draw upon new fiber supplies, research on waste paper has been to a large extent neglected despite the important conservation aspects of the expanded use of waste paper fibers.

The patent literature on certain aspects of waste paper, particularly deinking is voluminous, but much of this is not research in the true sense. Research in papermaking supplies from waste papers should cover both improvements in present products and processes and new products and uses as well. In the first category the research should be more fundamental rather than cook-book style—getting at the mechanisms of de-inking, changes in the physical and chemical characteristics of the fiber by reprocessing and de-inking, pulping groundwood content papers without quality loss, and pulping waste paper mixtures, including wet strength papers. Research on new uses offers many interesting possibilities in the waste paper field, as, for example, in molded products and other plastics-fiber combinations.

* Presented at the N.A.W.M.D. Waste Paper Institute Meeting, Atlantic City, N. J., October 7, 1950.

[1] Director of Research, Syracuse University, Syracuse, N. Y.

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Butyl rubber has made a place for itself because of good aging characteristics, freedom from light discoloration, low moisture-vapor transfer and other outstanding properties. It is made at extremely low temperatures following mass polymerization techniques rather than by emulsion polymerization as with many other synthetic materials.

In order to make the outstanding characteristics of butyl available in latex form, Naugatuck Chemical has developed a whole new series of water-based dispersions based on butyl rubber suitable for coating, saturating, and adhesive applications.

For further information, write or call your nearest Naugatuck technical representative.

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Possibilities of Research in Papermaking Supplies*

DR. GEOFFREY BROUGHTON[1]

The subject I have been given today is a broad one and it will be well for us if it is narrowed down to manageable proportions. First — paper, as you know, can be defined as a mat of cellulose fibres. This mat is formed from water and its manufacture is in many ways a chemical engineering problem of how to remove 99.5 percent water from 0.5 percent cellulose. Hence, with some truth one could say that the chief papermaking supply is water. Contrary to popular belief there are many research problems connected with this material but today we must pass them over. Again a mat of cellulose fibres alone, such as we have here, would not be paper as we know it and would be of little use except as blotting paper. Sundry chemicals such as rosin, alum, starch, gelatin, endow it with the properties which we have come to look for in a sheet of paper. Here, therefore, we again have another class of supplies for the papermaker. They present another series of problems to the chemist, which we will again pass over.

This afternoon let us devote our time to the possibilities for research in connection with cellulose itself, the basic chemical of paper. This, I imagine, is of greatest interest to you since rags have been the principal source of cellulose for paper and still comprise about 2 percent of the total. Historically, papermaking has always been a struggle for sufficient supplies of cellulose. In colonial times it was a matter of patriotism to give one's old clothes to the papermaker, in the 1850's there was even a shipment of Egyptian mummies for the sake of their linen shrouds. This source of supply fortunately or unfortunately, is no longer available. But, as we can see with pulp at a purely nominal price of $100-$130 per ton, with none available, waste paper (No. 1 mixed paper) at $20 per ton, and white cuttings at 16-18 cents per pound, we are still hunting for cellulose today.

What is this material, cellulose? In order to consider research possibilities we ought to have some idea of its properties. Cellulose is a natural high polymer, made up of $C_6H_{10}O_5$ groups (to the chemist glucopyranose units) which repeat over and over in a long chain. If each of these clothes pegs represents one $C_6H_{10}O_5$ unit, one can visualize chains made up of over one thousand of these units, one twenty-five thousandth of an inch say, in turn bound into bundles of ten to a hundred to form a fibre or fibril.

The properties of cellulose depend very largely upon the length of these chains. You may have wondered why certain types of pulp are unsuitable for nitro-cellulose or why cotton rags are so highly regarded for the most permanent and best quality papers. The answer seems to be chain length. You can see that each of these units is attached to the next by a bond, which like the model, is not too strong and is readily attacked by chemicals. Acid, in particular, causes what the chemist calls hydrolysis, a breakage of the link and the shortening of the chain.

Thus, cotton in the unopened boll has chains with a D.P. of over 5000, i.e. the chains contain over 5000 of these glucose units. By the time the boll has been open a short time, weathering has reduced the D.P. to 3500 or less, manufacture may bring it down to about 3000 while wear and washing bring it down to 200 or less, where the fibre loses its strength completely. Here, I have two samples of cotton — one new, the other with a chain length of about 200-250. The difference is obvious.

For comparative purposes, the competitor to rags — sulphite chemical wood pulp has a D.P. of about 1000. Since the Institute of Paper Chemistry and the Bureau of Standards seem agreed that paper permanence is a function of the chain length, i.e. other factors being equal, the longer the chain length the better the permanence; the reason for the superiority of new rags over pulp from wood is seen. It can also be appreciated that old, inferior rags can well be inferior to wood pulp.

The other salient chemical fact about cellulose is also shown on our model. These red spots indicate hydroxyl groups, three to each unit. These are the reactive groups, which when cotton is acetylated or nitrated, go into combination with the acetic or nitric acid. They are also responsible for the water sensitivity of cellulose and indeed, for its ability to form a sheet of paper. However, there is little that can be done about these groups, unlike the chain length they are not easily altered. If we react them chemically, say to obtain cellulose acetate, then we obtain a material with much lower water sensitivity and which has lost the ability to hydrate and form a paper sheet.

However, it is upon these reactive, hydroxyl groups that many of the modern textile finishes depend. It can readily be seen that if we have as few as one cross link between two adjacent cellulose chains that they cannot be separated without some form of chemical treatment. This means that the fibres will not respond to beating and will be poison to the papermaker.

One of the commonest textile treatments is with urea-formaldehyde or melamine-formaldehyde for crease resistance. There are good grounds for believing that some links are formed between hydroxyls in adjacent cellulose chains and in this way, the fibres are set in place resisting subsequent creasing. Such bonds are quite stable although they can be broken by acid hydrolysis i.e. at low pH. Consider now the trouble of the papermaker when receiving such treated rags, which superficially appear the same as ordinary material. Disintegration does not occur in the normal manner, the fibres are bonded together and trouble results. In some treatments the resin content may be as high as 5 percent.

Equally objectionable may be the treatment of cotton with thermoplastic resins to improve hand, abration resistance, etc. Materials of this kind, the vinyl resins, methacrylates, so-called permanent starches, etc., while not actually crossbridging coat the fibres with a water insoluble; almost water-impermeable layer. This is equally troublesome during the beating operation.

Another class of materials, which are finding increasing use as finishing agents, are the cationic softeners. These may be applied in quantities as high as 25 percent by weight. Again they are water insoluble and pose a problem in the beater room.

Our professor of textile finishes at the Institute, Prof. McDonald, has estimated that probably one-third of all cotton fabrics at present produced receive one of these three types of finish.

The possibilities for research on papermaking supplies, specifically rags, are now, I believe, obvious. In order to assist the fine papermaker to keep his market for rag paper the following are directions in which research might help:

(1) The development of better methods for collection, sorting, cooking, etc., of rags so that degradation of the cellulose is kept to a minimum.

(2) The development of a method

* Presented at the N.A.W.M.D. Cotton Rag Council Meeting, Atlantic City, N. J., October 6, 1950.

[1] Head, Department of Paper Engineering, Lowell Textile Institute, Lowell, Mass.

of identification of the various resin finishes so that rags carrying these treatments could be readily segregated.

(3) Perhaps better still, the development of treatments or cooking methods to permit the use of rags carrying resin finishes.

Other possibilities for research will probably suggest themselves to many of us but the above three are, I believe, the outstanding items, solution of which would materially benefit the papermaker and, in turn, the rag merchant.

A Labor Viewpoint on Bargaining Trends*

Excerpts from an address by George W. Brooks[1]

A surprisingly large number of trade unionists are very well aware of the hazards of our current situation, and I am referring not to the hazards of a Communist conquest but to the hazards of the growing centralization and bureaucracy. The problems we confront today are different in kind as well as in degree. The question is no longer "what temporary powers must be granted to government, and for how long?" but rather "what must we do right now, and all the time from now on, in order to be sure to preserve a considerable measure of our freedom?"

Management seems to be ready or resigned to accept far-reaching limitations upon our free enterprise system, whether it be price floor legislation, price-fixing arrangements, monetary controls or regulation of labor-management relations. I am not trying to be clever or shocking; we are very fearful that we are the only people who cannot make peace with a controlled society.

For organized labor, the central issues will be those of manpower controls, and nowhere is the divergence of views between the bureaucrats and trade unionists more extreme. It is extremely disturbing to us to discover how many people have a total lack of faith in democracy as a *means* for getting good jobs well done. At bottom, I think, too, that this is what disturbs us most about the military. They seem to have a genuine belief in the *desirability* of democracy but little or no faith in its ability to procure its own survival. Freedom is a luxury to be secured for briefer and briefer intervals by continually larger concessions to semi-totalitarianism.

We do not share this view, and we regard it with abhorence when it becomes the basis for the regulation of manpower. Contemplate, if you will, the task of moving 15,000 or 20,000 building construction workers to an isolated spot and persuading them to work 80 or 90 hours per week. Are there any powers which could conceivably be granted to government which would accomplish such a job with the speed and skill with which it has actually done not once but many times during World War II.

We ought not to regard so lightly the arrangements which labor and management in this country have worked out over the years. Those persons who advocate manpower controls assume that the addition of controls to an already high level of production would produce yet more goods, particularly in what they call the "critical" areas. That point of view is, in our opinion, one of reckless ignorance which might well have the most catastrophic results.

I think we deserve the support of management on this issue of manpower controls. There is an enormous amount of apparent good will between management and labor circulating about this country, a good deal of it, I am glad to say, in our own pulp and paper industry.

I think you will all find that this question of manpower control — the question of the extent to which limitations will be placed upon the free choices of workers — will be the consideration to which labor people attach the largest importance. But hardly less important is the way in which labor disputes will be handled during a war or other national emergency. I assume we can take it for granted that management does not want seriously to abridge the right to strike. It is our conviction, and I assume it is yours also, that even during the prosecution of a war the smallest possible number of industries should be *subject* to any outright prohibition of strikes. The heads of almost all labor unions in this country are fully cognizant of the desirability of exercising their own restraints, upon the exercise of the right to strike. The extent to which they will be successful in pursuing such a policy with their members will depend upon the consent and administration of the quid pro quo. And the quid pro quo is not, as some management people still assume, an equal restraint on the use of the lockout. It is not possible, of course, to define the quid pro quo for all possible situations, but roughly it may be said that strike pledges will be workable only if the union can get about as much from collective bargaining negotiations and from arbitration as it would have gotten if it had struck. This is a difficult concept to administer, because it seems to set aside notions of equity and justice. And indeed it does. But the whole of our economy and the whole trade union movement are based upon this notion. One of the most difficult problems that trade unions have with bureaucrats is the bureaucratic insistence on giving primacy to the removal of sub-standard conditions or what they call "injustices or inequities." For much of our trouble in World War II resulted from the insistence upon this view.

In contrast with the problems of manpower controls and disputes I believe that the problems raised by inflation will be relatively easy to deal with. Perhaps this is over-optimistic. But I think that wage-earners, along with other people, were well educated in World War II in the problems of inflation, price control, wage control, and the like, and that there will be no serious difficulty in securing consent for an equitable price-wage system.

I may seem to be too cheerful about this, in the light of the AFL action urging price controls but no wage controls. I venture the guess that this is not a firm position, and that the AFL and CIO well understand that in any system of price control, the price of labor must be stabilized along with other prices. This is a self-evident proposition to which labor will offer no serious argument. I think the basis of the AFL statement was the conviction that the sudden or haphazard application of price controls might well work a substantial inequity among the various income receivers in the country, and that the first proposals did not take account of the timing of collective bargaining negotiations, seasonal price increases, and profit taking.

As a matter of fact, the trade unionists' position on inflation is always likely to appear inconsistent. On the one hand, all well-informed trade unionists understand that a *continuous* inflation runs counter to their interests. Trade unions are almost never able to do more than keep abreast of an inflationary movement. The widespread notion that trade union wage proposals are the primum mobile of an

* Presented before the Personnel Conference of the American Management Assn., at the Hotel Statler, New York, October 2-4, 1950.

[1] Director, Department of Research and Education, International Brotherhood of Pulp, Sulphite and Paper Mill Workers, Washington, D C.

inflationary spiral is pure nonsense. I think it can be shown, although no one has yet done it statistically, that the effect of trade union organization in an inflationary spiral is to decelerate the upward movement of wages; it would follow, as indeed it did, that unorganized workers gained proportionately more during the war than did the organized workers. Every good trade unionist also knows that the real gains of wage-earners, that, the gains in *real rates per hour*, are made during periods of downward price movements when contractual wage rates are much stickier than other prices.

But on the other hand, a slow in flation — especially if it does not last too long — is quite a boon to the professional trade unionist, whose principal business is the negotiation of wage increases. There is no doubt that the life of the trade unionist is much easier during periods of inflation. For some reason wage-earners will accept a 5 percent increase even when it is accompanied by a 5 percent increase in consumer prices much more readily than they will accept a 1c increase with no change in prices. And the resistance which all wage-earners will make to a wage *decrease* of (let us say) of 2c is apparently not in the least diminished by the fact that consumer prices may be decreasing by a much larger amount.

Your trade unionist, therefore, is something of a divided personality when he contemplates the problems raised by inflation. But I think it is safe to say that, being much better informed than he ever was before on this type of issue, he will (if the need is indicated) *demand* price control, he will *accept* wage controls, and he will be much more alert to the real issues involved in the administration of price and wage controls.

For example, I think he may press for a separation of the dispute settlement authority from the stabilization authority.

The main point is the point with which I started, that at this moment the trade unionist (which in this country means the labor movement) is above all anxious to preserve the free enterprise system, because it still believes that the interests of its membership lie in securing (as it has been doing for many years) a share of an increasingly large output. But I doubt very much that this attitude will survive a prolonged period of federal regulation of prices and wages. Such a period would force labor leaders reluctantly to abandon their somewhat uncritical faith in the free enterprise-collective bargaining system because the possibility of additional gains would then depend upon the kinds of things that could be done through government rather than the kinds of things which could be done with employers.

FORESTRY

CANADA'S FORESTRY PROBLEM

TORONTO, Ont.—Forest management, or mismanagement, in Canada, is becoming an increasingly provocative topic. More and more people outside the lumbering and pulp and paper industries are becoming more vocal and increasingly critical of all government agencies as time keeps slipping by without anything important being done about what is generally conceded to be a scandalous situation in the forest industries.

In a recent three-day trip through Northern Ontario, Premier Leslie Frost confined his calls chiefly to mining and agricultural districts of the north and that may account for the fact that he did not announce any policy regarding forest administration, which many expected he would do. During a visit to Abitibi Power & Paper Co. plant, however, he did say that he was pleased to learn that the company, through reforestation and natural replacement, would be able to operate indefinitely on its timber limits of 4,000 square miles. He urged northern timber industries to profit from the lessons learned by southern Ontario, where thousands of square miles of land had been laid waste by clearing the timber off areas not suitable for agriculture.

Northern Ontario forest industries may be even more interested than the premier in avoiding a repetition of that tragedy, but they feel that the government can do much more than they can to prevent such a tragedy and in that respect the government is neglecting its plain duty, northeners state.

"Our forests have been and now are being despoiled for generations to come," Edward E. Johnson, president of Great Lakes Lumber and Shipping Co., Ltd., declared recently. Mr. Johnson said the pulp and paper industry has a monopoly on all accessible merchandisable timber. The department of lands had "refused for more than three years to grant cutting permits without the consent of this huge monopoly."

Mr. Johnson's remarks were inspired by a statement by Alderman R. A. Robinson of Port Arthur, chairman of the Lakehead Liasion Forestry Committee, that aerial surveys are being made by the Ontario Lands Department with a view to providing sawlogs for portable mills operated by the company. He branded the report as "eyewash and smokescreen."

"No temporary or permanent areas have been delimited for the operations of the Great Lakes Sawmill in Fort William," Mr. Johnson said. "At best the mill could not operate before 1952. The forests remain a political football. During the last five years, a total in excess of 20,000 square miles has been alienated to American interests for the purpose of exporting raw pulpwood and raw wood pulp to their American interests," he concluded.

Aside altogether from the particular grievance of Mr. Johnson, it is a fact that the Kennedy report states in part:

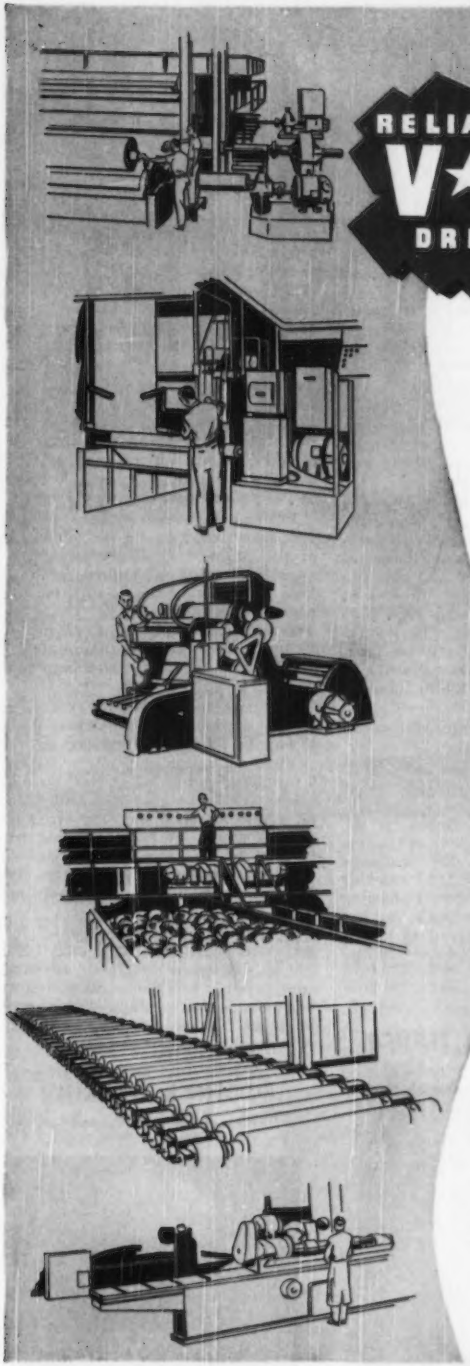
"The most striking impression made on the staff of the commission has been the tremendous, almost incredible, waste from single-purpose operations. Few sawlog operators produce pulpwood occurring in stands they cut over. In fact, many of their leases or permits, do not permit them to do so. Few pulpwood operators cut sawlogs occurring in their pulpwood stands. Again, many of their licenses do not permit them to cut sawlogs."

The Kennedy report also states: "In many instances timber areas held by operators have little relation to the present needs of the units of industry concerned. Some have much more than their mills, as presently constituted, can possibly use, while others, particularly the vast majority of the sawmilling group, can foresee their extinction, due to lack of timber, in periods of time varying from two to 25 years.

"Throughout the years there has been no enduring policy concerning the leasing of forest lands. Political expedience at times seems to have entered into negotiations."

"Political expediency" is the significant clause in the Kennedy report. It is this feature that is behind a lot of the present criticism. The clause seems to have been in operation for many years. Just what it involves the public would like to know. Did some former government tie itself to the pulp and paper interests so tightly that succeeding governments cannot disentangle the mess?

Evidently the genesis of the bad business was something that took place prior to the time of the Drew administration—something about which ex-premier Drew had cognizance. At any-rate, prior to his election he made great promises as to what he was going to do to straighten out the forest industries. After the election, he appointed a one-man commission to tell him what was best to do. The Kennedy report subsequently made important recommendations. The Drew government did little or nothing about these recommendations. When Premier Frost succeeded Mr. Drew there was considerable hope that he would lose no time in getting something done about the forest industries. His failure to give any hint as to his intentions, if any, while he was visiting the areas most concerned, was, to say the least, disappointing to those who feel much the way Mr. Johnson of the Great Lakes Lumber and Shipping Co., Ltd. feels about the difficulties of the sawmill operators.



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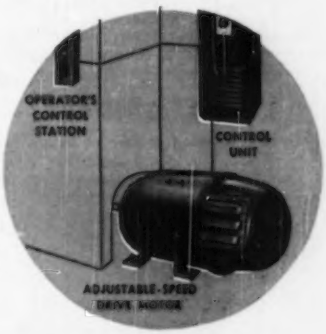

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The University of Maine

HOWARD A. KEYO

Director, Publicity Dept., Univ. of Maine, Orono, Me.

The University of Maine, extolled the world around in the famous Stein Song as "the college of our hearts always" and often referred to in paper-making circles as "the cradle of the industry's technical training," is located in Orono, an attractive town of about 3,700 population, about half way between Kittery, the most southerly town in the State, and Fort Kent on the northern boundary.

The campus of over 200 acres is situated about a mile from the business section of Orono and borders the Stillwater River, a branch of the Penobscot.

Originally established as the State College of Agriculture and Mechanic Arts under the provisions of the Marrill Act, approved by President Abraham Lincoln in 1862, the institution opened September 21, 1868, with 12 students and two faculty members. By 1871 curricula had been arranged in Agriculture, Civil Engineering, Mechanical Engineering, and Elective. From these curricula there gradually developed the Colleges of Agriculture, Technology, and Arts and Sciences. Women have been admitted as students since 1872. In 1897 the name of the institution was changed to the University of Maine.

During the more than four-score years that have passed since it opened in quarters provided by two farm houses and one wooden building, the University has grown into one of the great land-grant institutions of the country with an enviable record in teaching, research, and service not only to business and industry but to the state and nation. Its facilities now include modern laboratories, classrooms, dormitories, and equipment, and its regular student body since the war has annually numbered over 4,000.

Administrative units of the University include the Colleges of Agriculture, Arts and Sciences, and Technology, School of Education, Graduate Study, Summer Session, Agricultural Extension Service, Maine Agricultural Experiment Station, Maine Technology Experiment Station, and the Department of Industrial Cooperation.

Over 950 different courses are offered in the 34 departments of instruction. These courses range all the way from accounting to zoology.

Heading the University of Maine is President Arthur A. Hauck who came to Maine in 1934. During his 16 years at the University, President Hauck has been an inspiring leader and able administrator who has been tireless in his efforts to advance the high purposes of the University. The institution is controlled by a Board of Trustees which has supreme authority in all matters pertaining to the University.

Postwar Expansion

Because of the great influx of G. I. students following World War II, the University established an "annex" called the Brunswick campus, at the former Naval Air Station at Brunswick, Maine. Some 2,400 freshman students lived and studied there during its three years of existence. Following completion of the freshman year at Brunswick, students moved to Orono for the last three years of their college training.

Even with the Brunswick campus in operation, the Orono campus was thronged wtih students. Twenty-eight barracks made available by the Federal government, were moved from South Portland to the Orono campus and set up as dormitories for single students. Two new dining halls were also established.

In addition, 23 buildings containing 196 apartments, made available by the Federal Public Housing Administration, were located at the south end of the campus for married students and a few faculty members. A colony of 32 trailers was also established.

Realizing the inadequacy of these temporary structures, a special session of the Maine Legislature granted an appropriation of one million dollars in 1947 for the construction of three permanent dormitories. The University Trustees were authorized to borrow up to one million dollars to aid in this construction, which has now been completed.

The rise in enrollment created as serious a problem in the classroom as it had in living accommodations. To meet this situation, the college day was lengthened, some classes were held at night, class sections were enlarged, and all available space was converted for classroom use. A Navy building was brought to the campus from Sanford, Maine, and set up near Stevens Hall to provide additional classroom and office space.

Again the Legislature went into action to provide an additional $400,000 to supplement $629,000 previously appropriated for the construction of new Plant Science and Engineering buildings. These two new structures were opened for classes last fall.

LYLE C. JENNESS

Head of Chemical Engineering Dept.

PRESIDENT A. A. HAUCK

JOHN B. CALKIN

Director of Industrial Cooperation.

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Library

New Engineering Building

A new Library, started in 1941 and left unfinished during the war years, was opened in 1947. This building, made possible through the gifts of alumni, faculty, students, and friends, is one of the finest on the Maine campus. Carnegie Hall, the former library buildings, was converted to the use of the art and music departments.

A new Animal Pathology laboratory has ust been completed, and ground was broken during commencement week end in June for a new Union Building. The Union building, like the library, has been made possible by gifts of interested alumni, faculty, students, and friends of the University.

The College of Technology

Through all the years the University's College of Technology has made significant contributions in education, research, and service.

The University's catalog points out that "the College of Technology offers a well-rounded education for the ambitious, properly qualified young man with an aptitude for mathematics, physics, and chemistry."

"Scientific and technical work, accompanied by courses in English and public speaking, economics and psychology, or other groups of electives," the catalog indicates, "prepares the student, upon graduation, for an administrative career as well as for purely professional work.

"Emphasis is placed on study and interests which will promote the engineer's active participation in the civic and social life of his community."

The College of Technology offers curricula in Chemical Engineering, with an option in Pulp and Paper Technology; Chemistry; Civil Engineering, with options in Highway Engineering, Light Building Construction, and City Management; Electrical Engineering; Sanitary Engineering; Light Building Construction, and City Management; Electrical Engineering, with elective groups of studies in Communication and Power; Engineering Physics; General Engineering; and Mechanical Engineering.

Professor Lyle C. Jenness, who joined the University of Maine faculty in 1923, is head of the Department of Chemical Engineering. During his more than a quarter century at Maine, Professor Jenness has seen the department, long known as the birthplace in America of university training for the pulp and paper industry, take on many added responsibilities.

The chemical engineering curriculum at Maine is designed to provide the education necessary to prepare men for successful living in the modern world, for those who wish to undertake professional work in the design, operation, and improvement of the processes of the chemical industry.

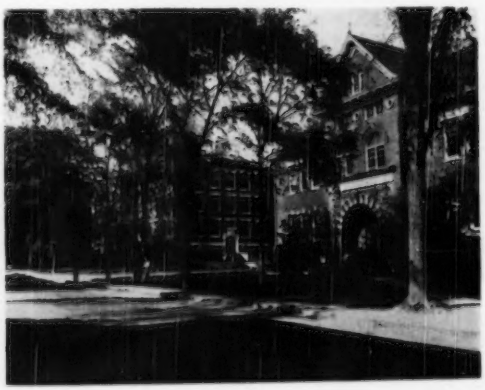
Quoting from the catalog description of the work of his department, Professor Jenness points out that the curriculum provides a broad background in the humanities and in the fundamentals of science and engineering, and affords the opportunity for the application of these fundamentals in professional courses.

Since it is essential that chemical engineers have a sound basic training in chemistry, the curriculum in the sophomore and junior years includes all the fundamental courses in the chemistry curriculum. In order that the student may gain an early understanding of the significance of his major field, professional chemical engineering courses are introduced in the sophomore year and continue through the last three years in logical sequence. The great majority of the course work in the senior year is made up of these professional courses. Necessary basic knowledge of electrical and mechanical engineering is provided by courses in these departments.

One of the most important activities of the department is the Division of Pulp and Paper Technology. Students who intend to enter the pulp and paper

Memorial Gymnasium

Lord Hall in Foreground. Aubert Hall at Extreme Left.



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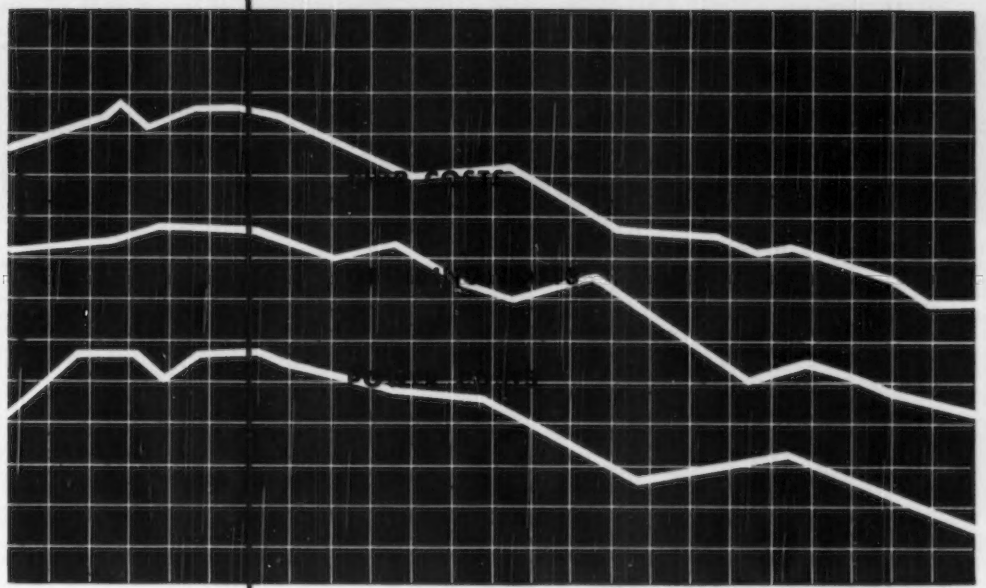

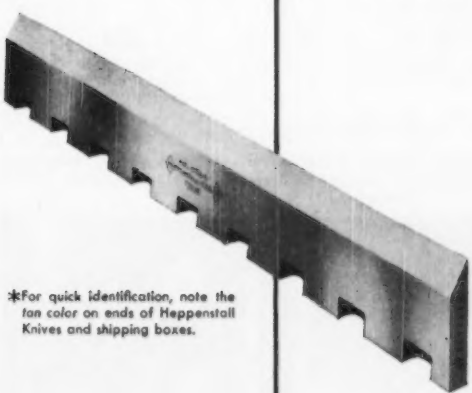

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Left—The members of the staff—The men who now teach the various courses connected with the pulp and paper program at the University of Maine are shown conferring with Professor Lyle C. Jenness, (standing) head of the department of chemical engineering. Left to right, Dr. Edward F. Thode, associate professor of chemical engineering; Dr. Irwin B. Douglass, professor and head of the department of chemistry; John B. Calkin, director of the Department of Industrial Cooperation and associate professor of chemical engineering; Matthew McNeary, professor of engineering drafting, who assists with the industrial lecture program; Professor Jenness; and John Lewis, assistant professor of chemical engineering. Right—U. of M. Paper Testing Laboratory—Here is a section of the well equipped, air-conditioned laboratory in which students taking the pulp and paper courses at the University of Maine make control tests. Shown at work in the laboratory are Andrew J. Chase, left, and John F. Gorham.

industry or allied fields may elect to take a senior year curriculum largely composed of specialized professional subjects in the pulp and paper field, the other years being identical with the straight chemical engineering curriculum.

A new five-year operational management course in pulp and paper is being offered at Maine for the first time this fall.

This new program, which is an optional one in the department of chemical engineering, is specifically designed for young men interested in becoming qualified for positions in production. It does not replace the present four-year course nor the five-year curriculum which leads to the master of science degree.

Students taking the new five-year course will cover the usual requirements for the first three years of chemical engineering or equivalent preparation. The fourth and fifth years will include specialized courses in pulp and paper, and approximately an equal number of courses in economics, business, and psychology. The latter group of courses will include labor problems, personnel management, corporation finance, business law, and marketing.

Those enrolled in the five-year course will be expected to devote at least two summers to working in industrial plants. Satisfactory completion of the five-year program will lead to the B.S. degree and simultaneous award of a special certificate.

The program will be approved only for those students who appear to have aptitude and interest in management vocations. This decision will be based on academic attainment and the results of certain tests.

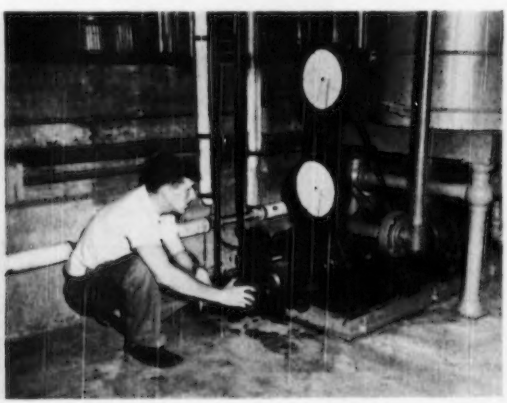
Scholarships from the recently established University of Maine Pulp and Paper Foundation will be available for some students who qualify for this program.

Representatives of the pulp and paper industry who are experienced in the duties of production and management are serving as an advisory committee in the administration of the new program. The course is open to young men already doing industrial work who are interested and can qualify.

How Pulp and Paper Courses Were Started

Dr. Ralph H. McKee, who came to the University of Maine in 1909 as professor of chemistry and chemical engineering, and who is now a consulting chemical engineer in New York, has recorded for posterity some of the events which led to the establishment of university training at Maine for men who wished to go into the pulp and paper industry.

Left—Pulp Testing Laboratory—John M. McClure, left, prepares a sample of pulp stock for use in the Hermann Sheet Machine, being used at right by Warren A. Abbott. Right—Refining pulp stock—Benjamin F. Hodges, Jr., is adjusting clearance of the Jordan refiner, one of several pieces of equipment for this purpose.



Bailey Electronic Instruments Work Here at the Lake Charles, La. plant of the Mathieson Chemical Corp.

Bailey Electronic Instruments Work Here at the Kodak Park plant of Eastman Kodak Co., Rochester, N.Y.

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Bailey Electronic Instruments Work Here at the Chillicothe, Ohio Mill of the Mead Corporation.

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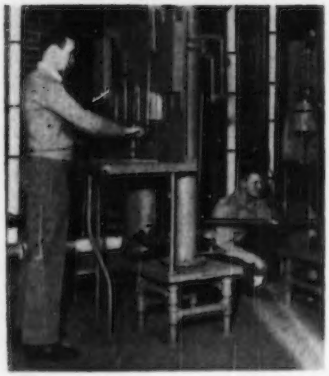

Acid-making Equipment — Thomas Parmenter, left, is sampling strength of raw acid while Robert Nelson makes control observations.

"It seemed that the Department of Chemistry and Chemical Engineering of a State University, such as the University of Maine, should contribute by its investigations to the advancement of one or more of the industries which were of primary interests to the State of Maine," he reports.

"As a step forward in starting the pulp and paper course, I succeeded in getting the appointment of A. G. Durgin, then a chemist at the Orono Experiment Station, as instructor in chemistry in September, 1912. I arranged with him to do some work at one of the local pulp mills so that he could become familiar with the general methods of pulp manufacture.

"At the same time, J. Newell Stephenson, a graduate of the Massachusetts Institute of Technology, and one who had worked as a paper machine operator in a Massachusetts mill, was also secured as a faculty member. He came to Maine with the understanding that his principal work would be in the field of paper technology.

"The fuel and steam situation, so far as the pulp and paper course was concerned, was taken over by Lloyd M. Burghardt, who later had charge of the analytical division of the research laboratory for U. S. Industrial Alcohol.

"Accordingly, the course in pulp and paper technology became one where McKee taught organic chemistry, chemistry of cellulose, and did part of the work on pulp manufacture; Burghardt taught the analytic methods used in the mills, methods of determining steam efficiency, the b.t.u. of coal, etc.; Durgin taught pulp manufacture and instruments used in its control; and Stephenson handled the manufacture of paper and bleaching problems.

"With the large growth of the student group in the pulp and paper option of chemical engineering, agitation began in 1913 for a new chemistry and physics building and the Legislature granted funds for this. Designs were made and contracts were let in the summer of 1914. This eventuated into Aubert Hall, certain laboratories of which were used for pulp making, paper testing, as well as for coal analysis and the like." (A new wing was added to this building in 1941-42.)

"Arrangements were made with the pulp and paper mills to take our students, during their last two vacations, and give them work in the mills. The department agreed to find such positions for these students and also put a requirement for graduation in the pulp and paper course that the students must spend two such vacations before receiving diplomas."

Apparently the plan to offer technical instruction to young men interested in the pulp and paper industry, which is officially reported to have started at Maine in February, 1913, met with the approval of the industry. At its annual meeting in New York in February, 1915, the American Paper and Pulp Association, passed the following resolution.

"Whereas, in the paper and pulp industry there is an ever increasing demand for efficient and intelligent employees, and

"Whereas, the paper and pulp industry is sufficiently exacting and distinctive as to demand special preparation of those anticipating to pursue work in the industry; therefore.

"Be it resolved, that the American Paper and Pulp Association

(1), Hereby expresses its hearty appreciation of the work being done by the University of Maine Paper and Pulp School in the training of young men in the fundamentals of this industry and

(2), That this association recognizes the desirability of young men supplementing the technical training provided by a University course along paper and pulp lines with practical mill experience, and in this belief recommends that the members of this association, give, when practicable, opportunity for mill experience to young men preparing themselves for work in our industry during their summer vacation period."

During the 37 years that have passed since Dr. McKee, now professor emeritus of chemical engineering at Columbia University, instituted the pulp and paper curriculum at Maine, more than 400 men have taken these courses. In addition, several hundred other Maine men have entered the industry with an educational background in other departments including civil, electrical, and mechanical engineering, forestry, economics, and other fields. Many of these men now hold highly responsible positions in the industry, in allied industries, and in schools where pulp and paper instruction is given.

Often these alumni and other leaders in the industry are invited to participate in an extensive lecture program at the University. In the course of these talks the experiences and problems with which these executives are daily confronted are brought to the attention of the students. During each academic year about 40 of these leaders from industry come to the campus to share their knowledge and know-how with the young men who will soon be going on to similar positions of responsibility.

Other departments at the University cooperate with the Department of Chemical Engineering in providing the well-rounded education that is now so essential. The other engineering departments—civil, electrical, mechanical, engineering physics—and the various cultural courses offered by the College of Arts and Sciences all play a part in making the graduate a man of wide understanding.

The Department of Industrial Cooperation

In 1945, the University of Maine established a Department of Industrial Cooperation to coordinate the University's many and varied relationships with industries. About 63 per cent of the research work in this department is now devoted to chemical engineering and the pulp and paper industry.

John B. Calkin, former coordinator of research for Union Bag and Paper Corporation, is director of Maine's DIC. He outlines the work of the department in this way in the concise booklet "A Service to Industry":

"Fundamental research is a primary function of the universities and in conducting this function they have contributed greatly to our national well-being. The importance of fundamental research, as the forerunner of applied research, cannot be over emphasized.

"Applied research and technical development are primarily the responsibility of industry; and it is evident that all industry, large, medium, or small, should have available the means for conducting investigative studies. One of the methods of providing this means is the use of university facilities. . . .

"The Department of Industrial Cooperation was established to assist in an expanded program of industrial service at the University. The department coordinates the University's contacts and relationships with industry, and has developed a program in which research staff and facilities are made available to industry.

"This department is University-wide in scope; it is not a part of any one University sub-division. It may enlist the aid of any of the experiment stations or academic departments of the University in the solution of industrial problems. To help assure a sound growth, an advisory group composed largely of prominent industrial leaders in the State has been established in order that this program may be developed with the benefit of counsel and advice from industry.

"The objective of the Department of Industrial Cooperation is to place the personnel and equipment of the

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University at the disposal of industry to the extent consistent with the policies and functions of the University.

"Many significant studies have been carried out for the wood-using industries. The handling and processing of lumber, plywood manufacturing and testing, chemical pulping, the development of specialty papers, and the extraction of oils from native conifers are recent subjects of investigation.

"The University is particularly well equipped to handle problems in food processing. By combining the facilities of the colleges of Agriculture, Arts and Sciences, and Technology, all phases of such problems may be considered. Although considerable progress has been made in this field, the possibilities in food dehydration, canning, freezing, production of extracts, and the like are still relatively untouched, and are most inviting. One recent cooperative investigation was concerned with the application of unique methods to fish processing and proved to be of particular industrial importance.

"Work has been initiated recently to assist the State of Maine Insurance Commissioner to reduce the hazards and losses by fire. This work is an example of excellent cooperation between various University and State departments.

"Specialized personnel and special equipment are available for chemical and bacteriological analyses of foods, drugs, agricultural and industrial materials. The same is true of chemical microscopical examinations and analyses of paper and textile fibers, metals, and other industrial materials.

"Fundamental studies involving hydraulics of liquid flow, equipment design, and electronics are in progress.

"The field of cooperative studies should by no means be confined to the purely technical problems. Research along other avenues, as, for example, on such economic problems as marketing surveys, consumer income studies, accounting procedures, and the like, would in many instances be equally as productive as technical research. Consideration of plant safety policies and practices is another field in which a real contribution can be made."

U. of M. Pulp and Paper Foundation

A new University of Maine Pulp and Paper Foundation, designed to step up the activities of the University's pulp and paper program, was announced in February at a luncheon meeting of Maine Pulp and Paper Alumni at the Roosevelt Hotel in New York.

Approved by the University's trustees and endorsed by many members of the pulp and paper industry, its affiliates, and suppliers, the Foundation will foster the following six-point program:

1. To interest more students who major in chemical engineering or chemistry to select the pulp and paper program.

2. To provide financial assistance in the form of loans and scholarships for students who plan to make pulp and paper their life work.

3. To offer a curriculum which will attract students and men from industry who will become leaders in the operating end of the pulp and paper industry.

4. To screen outstanding students with all-round ability, who have completed three or four years of basic college training, for a five-year course stressing operational management. These men would be eligible for scholarships or loans provided by the Foundation.

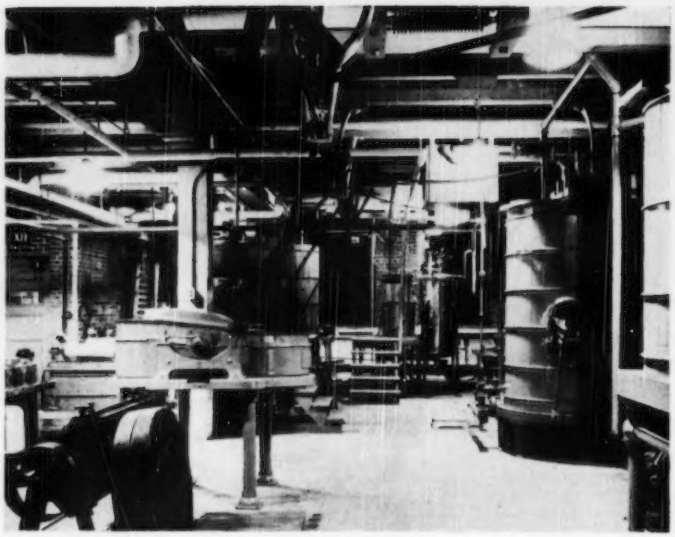
5. To augment the staff with personnel experienced in production management.

6. To advance fundamental and applied research for the pulp and paper and allied industries.

Dr. Arthur A. Hauck, president of the University of Maine, gave a brief account of the history of the pulp and paper courses at Maine and told of the benefits which will result from the establishment of the Foundation. He stressed the important part which industry will take in making the Foundation possible.

"The University is pleased that the industry is looking to us to help provide its future leaders," he said, "and we deeply appreciate the assistance which is being given in establishing the Pulp and Paper Foundation."

J. L. Ober, vice-president of the Scott Paper Company, Chester, Pa., and chairman of the Foundation's finance committee, gave a detailed presentation of the need for the Foundation, its objectives, and benefits.



General view of pilot operations in the University of Maine Pulp and Paper Laboratory.

Pointing out that the pulp and paper industry must attract and develop more outstanding men with special training, Ober said the industry depends on two sources — in-the-plant and in-the-school training — for men for supervisory and management positions.

Strongly advocating university instruction, Mr. Ober explained that there are now 921 pulp and paper mills seeking the services of the approximately 120 students who are graduated each year from American schools with pulp and paper curricula.

"This means that only one graduate is available right now for every seven mills," Mr. Ober declared.

Referring to the University of Maine as the "cradle of industry's technical training," Mr. Ober said the University has "the experience and necessary know-how to train men for the industry.

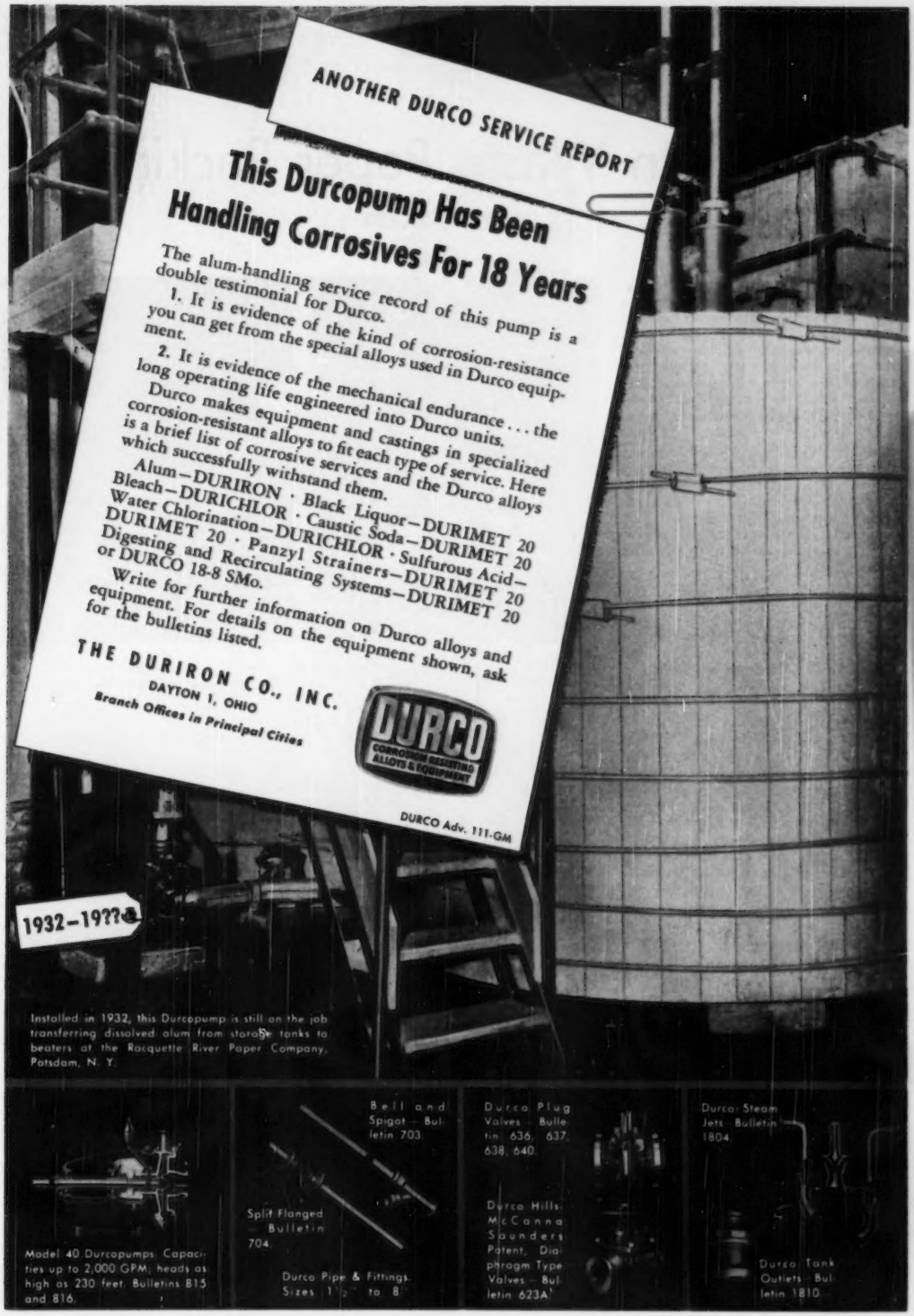
"Maine men have been recognized not only for their willingness and their capacity for work, but also for the practicability of their training," he said.

The Scott Paper Company official said the following benefits would be derived from the Foundation.

1. More students will be interested in study and work in the field of pulp and paper.

2. Men of greater potential ability, intelligence, and aptitude will be attracted to and will prepare themselves for careers in the pulp and paper industry.

3. With more and better qualified students interested in preparing themselves by in-school education, a better screening job can be done. Those students will be accepted for the pulp and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The alum-handling service record of this pump is a double testimonial for Durco.
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DURCO Adv. 111-GM
1932–19??
Installed in 1932, this Durcopump is still on the job transferring dissolved alum from storage tanks to beaters at the Racquette River Paper Company, Potsdam, N. Y.
Model 40 Durcopumps. Capacities up to 2,000 GPM, heads as high as 230 feet. Bulletins 815 and 816.
Bell and Spigot—Bulletin 703
Split Flanged—Bulletin 704.
Durco Pipe & Fittings. Sizes 1½" to 8"
Durco Plug Valves—Bulletin 636, 637, 638, 640
Durco Hills-McCanna Saunders Patent, Diaphragm Type Valves—Bulletin 623A
Durco Steam Jets—Bulletin 1804
Durco Tank Outlets—Bulletin 1810

paper course who can benefit from this specialized training. The five-year course will permit more intensive as well as broader training.

4. With the provision of greater opportunities for fundamental and applied research, the industry will be assured of the development of new knowledge and its practical application to the expansion and betterment of our companies and of the entire pulp and paper industry.

Modern Waste Paper Packing

COLLEY S. BAKER[1]

Modernization of wastepaper packing plants since the war, resulting in greatly improved methods of sorting and packing of wastepaper, is helping to make it possible for the nation's great paperstock industry to meet demands of the paper, paperboard, roofing and allied industries for wastepaper of high quality during the present emergency.

As the production capacity of the mills was being increased during the last five years, established wastepaper packers likewise were improving their plants, developing new methods and adding equipment which has enabled them to improve the quality of their packing.

Throughout the United States since the end of the war it has been estimated the wastepaper packers and dealers have expended $100 million for new plants, modernization of old plants, baling presses, conveyors, gasoline propelled conveyors, electrical equipment, trucks, etc., at the rate of approximately $20 million per year.

As the result of these improvements, the quality of paperstock coming from the plants has shown a marked betterment over war-time wastepaper packings. So proud are the owners of these modernized plants over their accomplishments that many are trademarking their products and offering them to the mills as superior packings.

A leader in this movement for the modernization of the wastepaper industry to supply consuming mills with carefully graded, quality-packed paperstock has been James T. Flannery, a wastepaper dealer and packer of Jersey City, N. J., who is completing his second term as president of the National Association of Waste Material Dealers, Inc. So great and so important has the wastepaper industry become that this association, composed of the country's outstanding producers of iron and steel scrap, nonferrous metals, wool stock, cotton rags, scrap rubber and other waste materials, as well as wastepaper, that one of its outstanding members was chosen on two occasions to direct the activities of the entire waste material industry in the nation.

By the end of this year the paper, paperboard, roofing and wallboard industries will have expended upwards of $250 million for more than 7 million tons of wastepaper.

Between 75 and 80 percent of this wastepaper will have come from office buildings, stores, commercial printing establishments, book and magazine publishers and industrial plants. The remainder will have come from the homes.

Approximately one-fourth of the paper and paper products consumed in the United States this year will be salvaged to be used in the manufacture of paperboard, roofing materials, paper and wallboard. During the last war, more than 35 percent of the national consumption of paper was recovered through high-powered salvage campaigns sponsored jointly by government and industry.

Wastepaper is a vital raw material, but it is entirely without value unless it is processed in accordance with specifications of the consuming mills, and there is a demand for it.

While there is always a demand for certain quantities of wastepaper that demand rises and falls with the availability of wood pulp and with the demand for paperboard, roofing materials and other paper products. Last year 77.6 percent of the total consumption of 6,552,800 tons of wastepaper in the United States was used

[1]Director, Eastern Conservation Committee, Waste Paper Consuming Industries

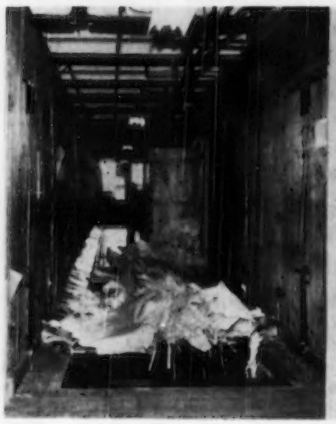

Figure 3. Paper flowing out of storage bins after sorting. Fed by conveyor belt into baling presses. Figure 4. Tying wires on a bale in one of the Logemann Hydraulic Balers.

Figure. 1. Unloading Trailer.

Figure 2. Sorting Dept.

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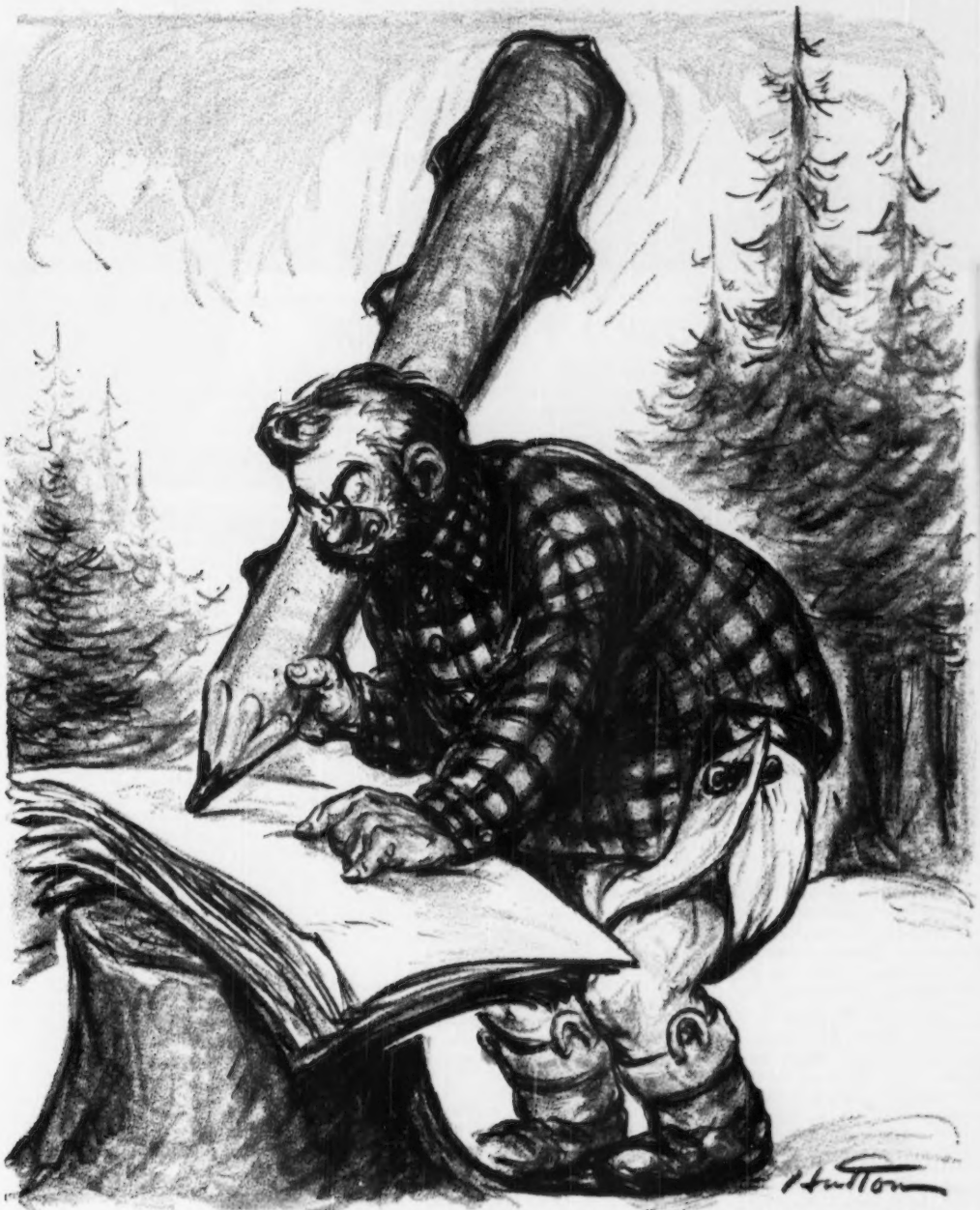

After Paul Bunyan wore out a gross of pencils on the letter "A" during his first day at school, he cut down a 12-inch pine, rammed out the heartwood, and filled it with lead. Six months later, he had mastered not only the entire alphabet, but also English Literature, Cost Accounting, and most of Integral Calculus.

A reproduction of this incident from the fabulous life of Paul Bunyan—the fifty-fourth of a series—will be sent on request. It will contain no advertising.

Figure 5. Loading sorting stock.

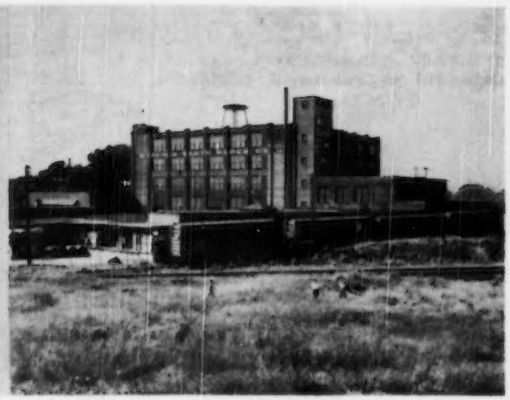

Figure 6. View of plant and Railroad Siding.

in the manufacture of paperboard, 7.9 percent in the manufacture of roofing materials, and 14.5 percent in the manufacture of new paper.

As the result of the increasing consumption of wastepaper, there has developed a great wastepaper producing industry in this country. In 1939, this industry supplied the consuming mills with 4,285,200 tons of wastepaper. During the war, in 1944, it supplied 6,937,000 tons. In 1947, highest of the post war years, the wastepaper industry produced 7,875,000 tons for the mills.

There are many grades of wastepaper, and each grade is packed and sold for a specific need of the mills. There are some grades of wastepaper that cannot be reclaimed, but the use of certain wastes are being expanded gradually to specific purposes. Most wet strength papers cannot be used by the wastepaper consuming mills, except through the use of special equipment, but there are now mills that are capable of dewaxing and de-inking milk containers, drinking cups, soda straws, etc., and certain glassine paper can be reused again by mills manufacturing such products.

Wastepaper production is becoming modernized. Great packing plants have been set up in important centers of population to which organized collections of wastepaper are regularly brought from industries, commercial establishments, office buildings and apartment houses. While the pushcart peddler, who picks up old corrugated containers, newspapers and other waste, still exists in the cities, most of the wastepaper is hauled out by trucks operated by drivers who make weekly rounds of their established sources. The wastepaper so collected is sold to packers, who process it for shipment to the mills.

Modern machinery is used in the processing and packing of wastepaper just as it is in the manufacturing of paper, board and other products. Office waste comes in huge bags. Old boxes and cartons are flattened and brought to the packing plants in bundles. From commercial printeries and magazine publishers the wastepaper usually is baled before being sent to the packing houses. Most of the wastepaper so received by the packers comes in trucks; some in boxcars by rail. A large unloading platform for truck deliveries and a railroad siding are important adjuncts of every wastepaper packing plant.

Motorized equipment unloads the wastepaper at the packer's door, and it then is unloaded on endless movable belts where it is carried to its destination — the sorting rooms.

Many modern packing plants consist of buildings with one or two floors. In some of the large cities, plants may occupy six or more floors, with sorting rooms on each. All the wastepaper may be carried by movable belt to the top floor, or may be taken off at the appropriate floors where certain grades are being sorted as the paper moves upward. The higher grades usually go to the upper floors. In these sorting rooms, the bales or bag are opened and again the loose wastepaper is put on movable belts that traverse the room. Stationed at short intervals throughout the room along the belt are the sorters, each with one or more containers. As the belt passes before them, each picks out the specific grade of paper that he or she is collecting and drops it in the appropriate container. Thus, hard whites, manilas, ledgers, kraft, soft whites, tabulating cards and other specific grades are completely separated from one another and deposited in the proper container. These containers, when sufficient of one grade has been accumulated to make a bale, are carried out and dumped into a baling press.

There are several types of baling presses, most all of which are operated by electric motors, and each type is selected for the specific operation. There are up-stroke and down-stroke balers, and for highly compressed bale hydraulic presses. Most baled wastepaper is held together with ordinary baling wire, such as is used also by agriculturists for hay and straw. Steel strapping sometimes is used also.

For consumption by the paperboard mills, large quantities of the bulky grades of wastepaper are packed. In fact, only about 17 percent of the wastepaper consumed by the board mills is of the so-called high grades. About 30 percent of the wastepaper the board mills consume is of the mixed grades, 28 percent of the news grades, and 25 percent of the container grades, chiefly old corrugated boxes.

Even in the packing these grades of waste paper, competent sorting is necessary for the elimination of foreign substances such as string, rags, metals, cellophane, rubber and rubbish, as well as objectionable papers, such as carbon paper, wet strength papers and the like. In the sorting of old containers, care must be taken to eliminate bindings in which asphalt, rubber and similar adhesives are used. In the sorting of old newspapers, care must be taken to eliminate most of the colored comic sections and rotogravure supplements.

Regardless of the grade of wastepaper packed, all must be baled in approximately 1500 pounds weight.

As each bale comes off the press, completely bound with baling wire, it is carried, usually by a motor-driven conveyor, to the scales, where the bale is weighed, and carefully tagged with the weight and the grade contained therein.

From there it goes either to the packer's storage room, or to a freight car or trailer-truck to be hauled to a mill.

Prior to and during the war, most wastepaper was shipped to the mills

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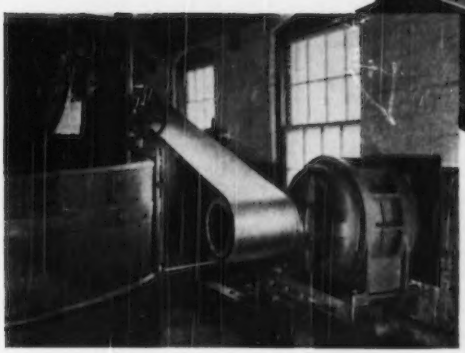

"Uni-Pull" is the latest in compact, individual drives. It has uniform pulling power both across and around the pulleys. This assures long, uninterrupted service with minimum maintenance.

YOU GET UNIFORM PULLING POWER *ACROSS* THE PULLEY FACES from the modern, flat leather belt. It pulls as a unit. No separate and uneven tensions. Just *one* belt; *one* pulley grip; *one* even tension across the pulley face, transferring power from motor to machine. No part of the belt width can ever loaf.

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AL-33

in boxcars, but, with a great increase in freight rates, there has been an increasing amount of truck shipments.

The Wastepaper Institute, a divisional association of the National Association of Waste Material Dealers, Inc., presently is planning a research program, the purpose of which is to develop ways and means of utilizing surplus supplies of the lower grades of wastepaper during periods when collections exceed mill requirements.

Head of the Wastepaper Institute is Haskell Stovroff, vice-president of the Buffalo Wastepaper Company, Buffalo, N. Y., through whose courtesy the photographs illustrating the operations in his modern plant were supplied.

Small Plant Set-Up for Insulation and Hardboard Manufacture *

R. T. DEPAN[1]

Abstract

Planning a small plant for making hard or soft board entails taking cognizance of quite a number of factors. There are several different processes used employing various types of equipment. The selection of the proper process calls for a study of the raw materials including their adaptation to board manufacture, cost of the plant, the manufacturing cost of board and the possibility of a steady market for the finished product.

Introduction

Considerable interest has been shown in this country in recent years in processes and equipment for the manufacture of insulation board and its somewhat denser counterpart hardboard. This interest has been stimulated to a great extent by the increased demand for low cost building materials, by the increased difficulty in obtaining first-grade peeling logs for plywood manufacture, by the increasing awareness of lumber mills and wood using industries of the need or desirability for utilizing waste and trim, and by the definite trend toward conservation and the necessity for more efficient utilization of one of our natural resources, the forests.

Insulating Board

The term insulating board as considered here indicates a porous rigid board composed of wood or vegetable fiber material. Although its insulating value decreases with increase in density, strength requirements place the lower limits of its density in the range of 14 to 20 pounds per cubic foot. Commercial thicknesses are usually ½ inch for wall panels, planks and tiling, up to 25/32 inch for sheathing purposes. Some ⅜-inch board is being made and laminated products up to 4 inches thick for roof insulation are also produced.

Due to the multiplicity of raw materials used there are numerous processes for the manufacture of insulating board, but only those utilizing wood in some form or another will be discussed. Also, processes producing less than 50,000 sq. ft. per day will not be considered.

Stock Preparation Methods

There are usually two broad methods for producing fiber for insulation board purposes, namely by grinding or by use of attrition mills.

Grinding

Perhaps the greatest percentage of fiber produced for insulating board is made by grinding the wood. Grinders may be of the pocket or magazine type. Wood bolts about 30 inches long and 4 inches to 20 inches in diameter are placed parallel to the face of the grinding stone with the long direction of the wood parallel to the shaft of the grinder. The stone of a specially designed abrasive travels at high speed. The wood is pressed to the face of the stone by a ram until it is ground into small fibers or fiber bundles. Water is played on the surface of the grindstone to prevent the wood from burning and to wash away fibers already ground. Wood for grinding is usually in the green state and is sometimes soaked in water or weak chemical solution before being ground. Grinding has a high production for unit cost of equipment but is limited to the physical size of the stick it uses. At present, work is being done on the grinding of chips and if it proves practical will enable insulation board manufacturers to use waste and small sticks in their process.

Attrition Mills

Asplund Defibrator. A continuous type of fiberizing machine used both in this country and abroad is the Asplund Defibrator. Wood chips are

Figure 1.—Elevation of 170-inch wallboard machine used for insulation-board manufacture.

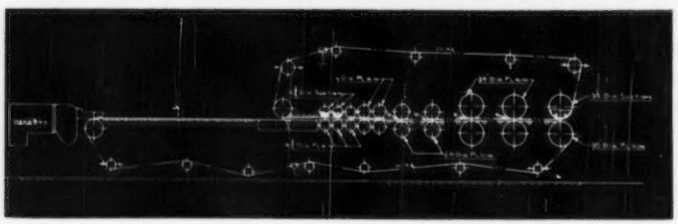

Figure 2.—Elevation of 120-inch wallboard machine used for insulation board manufacture.

[1] Development Engineer, Downingtown Mfg. Co., Downingtown, Pa.

* Presented at the Fourth Annual National Meeting of the Forest Products Research Society at Portland, Ore., June 26th-28th, 1950.

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With the Ross Cycle Conditioner more and more mills are now furnishing practically custom made paper with moisture content adjusted for the individual requirements of the customer. These mills have found that they not only get a better price for this better paper but greatly improve their competitive position and secure excellent returns on their investment in the conditioning equipment. In every installation the following results have been secured:

1. Higher moisture content minimizes misregister in multi-color printing.
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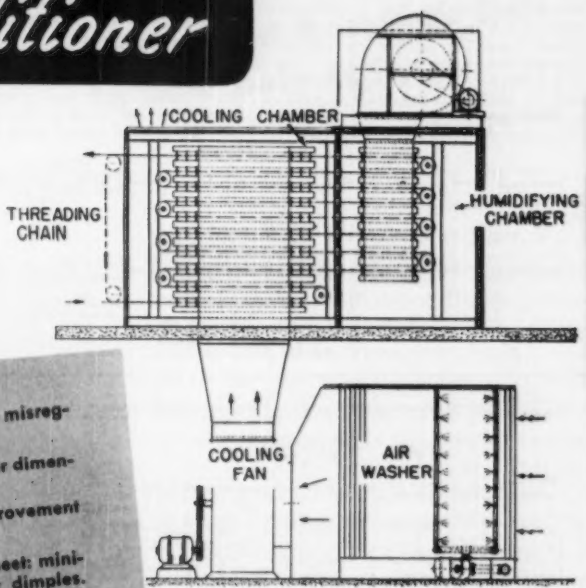

The Ross Cycle Conditioner adds any reasonable moisture content, uniformly and controllably, on webs up to 200 inches wide at speeds up to 2000 ft. per minute. It can be used as a separate operation or in synchronism with other operations. It will pay you to investigate the economic advantages of installing this conditioning equipment.

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pulped in the Defibrator at elevated temperatures in a steam atmosphere corresponding to pressures between 125 and 175 psi. The wood chips are continuously introduced into a high-temperature preheating chamber by means of a screw or plunger feed. Heating by saturated steam at temperatures ranging from 350° to 370° F. causes softening of the binding substances between the individual fibers. After passing through the preheating chamber, the heated chips are conveyed to the attrition disc while still under pressure. Here separation of the fibers is effected by passing the chips between a rotating and a stationary disc. After defiberization the pulp is blown from the defibrating chamber through reciprocating or nozzle valves to a collector under atmospheric pressure. A Defibrator may be expected to process 10 to 30 tons of dry wood per 24 hours depending on the type of wood and the degree of fiber separation desired. Asplund fiber may be further refined, after defiberization. For use in insulation board in this country Asplund fiber is usually mixed with groundwood or fiber produced by other types of attrition mills. It may be refined and used to the extent of 100 per cent in board if so desired.

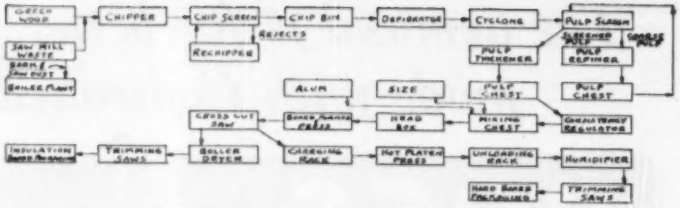

Figure 4.—Flow diagram of wet process for hardboard.

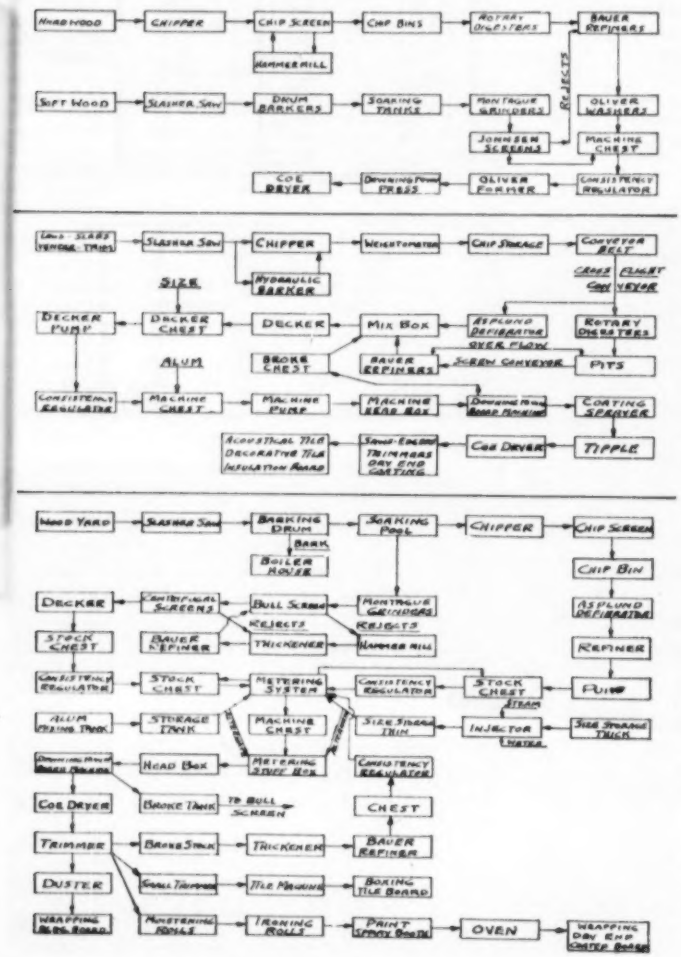

Figure 3.—Flow diagrams of insulation-board mills.

Other attrition mills. Other types of equipment for producing insulation board fiber from wood include the Bauer pulper, the Allis-Chalmers Interplane Grinder, the Sprout-Waldron Refiner, the McMillan Machine, the Elmendorf Defiberizer, the Weinerfiner and hammermills. The Bauer pulper has the greatest usage in the mills in this country. This is a double-disc machine in which both discs are rotated. Stock is fed to the center of the discs through an opening in the center of one and is discharged at the periphery.

For defibering wood for use in insulation board it may be advisable to cook it in some manner. A mild treatment may consist of a steaming at atmospheric pressure or a soaking in boiling water. A harsher treatment is effected by steaming under pressure and the time of steaming will depend on the type of fiber used and the end product desired. The treatment may vary from a few minutes steaming at 300 psi. to 120 minutes steaming at 30 psi. Very usable fiber is prepared from chips steamed for 15 minutes at 100 psi. Spruce, balsam fir, aspen and some of the pines in green or water soaked condition are being converted with disc refiners without any pretreatment at all. Power consumption on the above varies from 30 to 12 hp. days per ton. A Bauer pulper will therefore produce 10 to 25 tons per 24 hours with an input of 300 hp.

Cooking Equipment

For cooking the wood, rotary or stationary digesters may be used. The rotaries are most common and range in size from 12 to 18 feet in diameter. A 16-foot globe rotary will hold 8 cords of chips. Birch, a heavy hardwood, can be cooked to a yield of 85 per cent at the rate of 10 cycles per day or a capacity for the 16-foot digester of 125 tons.

Forming Methods

There are several types of machines for continuously forming insulation board. They are namely the double cylinder type of machines, the single cylinder type, and the fourdrinier type.

The two-cylinder machine was one of the earliest successful machines in commercial operation. A large wire-covered cylinder 6 or 8 feet in diameter is supported in a vat with a similar cylinder supported above it at

MacMillan Export Company

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The initiation of pulp manufacture by the MacMillan Export Company, Pulp Division, marked a significant step in the more effective overall use of British Columbia forests. This fine modern mill, located near Nanaimo on Vancouver Island, will use as raw material the large volume of waste woods of the various MacMillan lumber and plywood mills and logging camps.

The C-E Recovery Unit for this 250-ton mill will burn 770,400 lb dry solids per 24 hours, at a design pressure of 675 psi. The C-E Boiler is a Type VU, oil-fired with a capacity of 85,000 lb of steam per hr and a design pressure of 675 psi.

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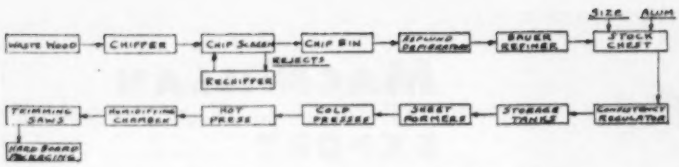


Figure 5.—Flow diagram of Chapman process for hardboard.

an angle of about 45° also dipping into the vat, material from which is carried upward to form a considerable hydraulic head on the two cylinders. Half of the finished sheet is formed on each cylinder and the two parts are pressed into one board on leaving the nip of the cylinders. The board then goes to a press section before drying.

The single-suction cylinder picks up the sheet by vacuum created by a barometric leg and a vacuum pump. Consolidation of the sheet is assisted by means of press rolls mounted on top of the cylinder mold. The board then goes to a press section before being dried.

The fourdrinier forming machine is somewhat similar to the conventional fourdrinier except that the forming and press sections are combined. One wire passes over the board forming section through the presses so that the board is undisturbed before going to the dryer. A top wire or felt is used on the press section.

The press section for continuous forming machines will vary considerably depending on the draining characteristics of the sheet and the speed desired. The number of presses may vary from two to ten and may be either plain or suction on top or bottom or both. Suction sliced may be placed in back of the presses to remove the pond of water accumulated there. Spring or pneumatic loading may be used. Press sections may be non-cantilevered or fixed or adjustable cantilevered. Presses are equipped with stops to regulate clearances between the rolls. *Figure 1* and *Figure 2* illustrate possible variations in press sections.

Drying Methods

Owing to the thickness of the board it must be dried in a flat condition and four different methods are used. These are (a) multiple-deck hot platen driers, stationary, (b) multiple-deck hot platen driers moving, (c) tunnel driers, and (d) multiple-deck continuous roller drier. The last type of drier is most widely used in this country.

Flow Diagrams of Wallboard Systems

Figure 3 illustrates three typical setups for the manufacture of insulation board in this country. For production of good quality board at a fair rate of speed it is essential that the fiber mixture consist of a mixture of long fibers for structure and ease in drainage and short fibers for the strengthening characteristics. There is, of course, a medium wherein the greatest percentage of the fibers can be approximately of the same length. Development of the fiber must be to such a degree that the board possesses the necessary strength characteristics commensurate with the desired draining qualities and bulk factors. Appearance of the board itself is also quite important. In the examples shown, one method frees up the normal groundwood furnish with some long fibered asplund material. In another method this freeing up of the groundwood pulp is accomplished by using Bauer-refined stock. The third method uses an admixture of asplund fiber and Bauer stock refined to different degrees and freenesses.

Hardboard Manufacture

Within the past few years there has been considerable interest shown in the manufacture of hardboard in this country and abroad. Part of this is due to the recent expiration of certain basic patents.

There are numerous processes for the production of hardboard as such. Some of these utilize some form of binder and as a base material sawdust, shavings or fiber produced by other than attrition mills. These are so

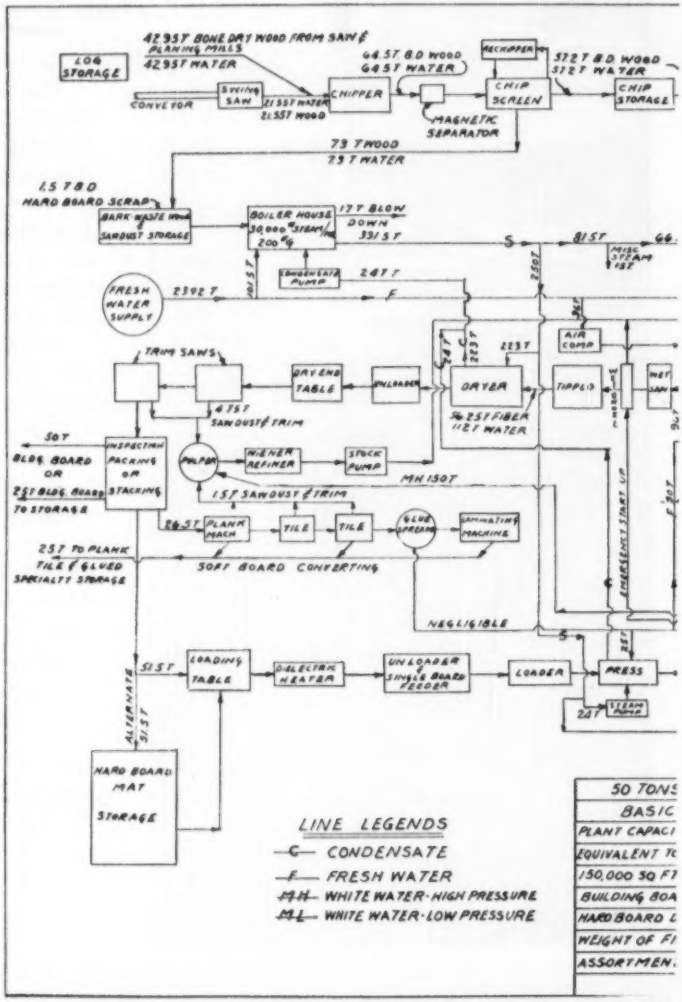


Figure 7.—Flow diagram of combination

called "dry processes" in that the material to be molded is spread into the molding trays as a dry mix and not suspended in a water medium. There are numerous variations of this "dry process," which will not be discussed at this time.

Hardboard as it is popularly known on the market is commercially produced by two methods. These two methods are similar in most of the steps of manufacture.

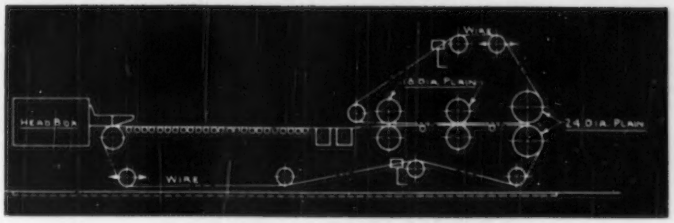


Figure 6.—Elevation of 64-inch hardboard machine.

Wet Process Hardboard

In this method of manufacturing hardboard (*Figure 4*) the fibrous mat formed by draining a fiber suspension in water is pressed in a heated platen press while still containing about 50 per cent water. Pressures used vary from 425 to 850 psi. depending on the type of wood used. It is customary to use a high pressure for the first part of the cycle and then decrease it during the latter part. Temperatures used approximate 350° to 400° F. Time for a complete cycle will vary slightly but will approach 15 to 20 minutes.

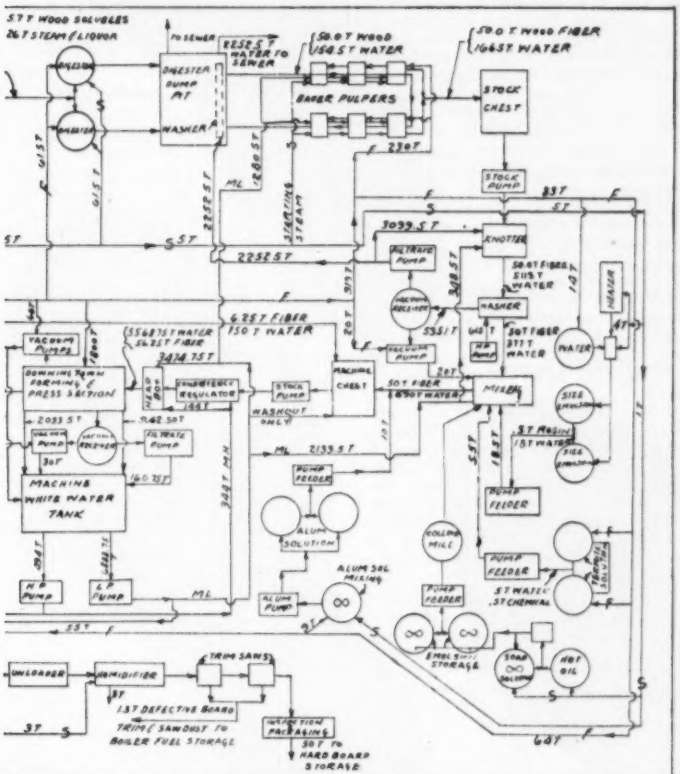
The wet process for making hardboard was originated by Mr. Mason approximately 25 years ago. The Masonite Company utilizes a process for producing fiber that involves high pressure steam treatment followed by a quick release of pressure. Both hardwoods and softwoods are used and, though usually barked, may also be used with the bark. The five-foot bolts of wood are chipped into pieces approximately ¾ inch square and, after being screened, are fed into a battery of 20-inch-caliber guns. A gun is filled and closed and steam admitted until the pressure registers 1,000 psi., equivalent to 550° F. or 285° C. After being held at this point for a few seconds the bottom valve of the gun is opened and the chips exploded against a target into a brown fluffy mass of fiber. Entering a cyclone the steam is let off and condensed and the exploded fiber falls into a stock chest where it is mixed with water and pumped through washers, refiners and screens. Forming is accomplished on a four-drinier-type machine after which the board passes between roll presses and then into a platen press for final pressing. The end product is very sensitive to the steaming time, which is dependent on the type of wood and the size and moisture content of the chips.

Other common methods for making fiber for hardboard are by use of the Asplund Defibrator followed by a refiner or by use of the Bauer refiner preceded by a cook of some sort. Tonnages and degree of fiber reduction can be varied by varying disc setting and cooking time.

Methods for forming the hardboard mat are continuous-forming by means of the fourdrinier former or the suction cylinder, and batch forming in large sheet molds. This latter method of forming is usually adapted to lower tonnages than is the continuous system. The wet batch process for hardboard as used on the West Coast is known as the Chapman Process and the major steps are shown in *Figure 5*.

Pressing of the wet mat in the continuous system is accomplished by means of a series of roll presses, some of which may be suction rolls. Pressing of the mat formed by the batch method is usually done with a platen press. Pressing of the wet hardboard sheet does not present much difficulty as the fibrous mat is quite free and loses water readily. *Figure 6* shows a typical machine for forming and pressing hardboard.

After pressing, wet process hardboard made by the continuous system is cut into suitable lengths and is



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DATA	RAW MATERIALS	EFFLUENT
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APPROXIMATELY	SAWMILL WASTE 42 95 T 80 24 HRS	WATER FROM WASHER 2252.5 T IN 24 HRS
OF ½" THICK	MOISTURE CONTENT (GREEN WOOD) · 50%	EVAPORATED IN DRYER 112 T IN 24 HRS
RD OR ⅛" THICK	ROSIN SIZE (SOLIDS) 5 T IN 24 HRS	MISC. STEAM 15 T. IN 24 HRS
EPENDING ON THE	ALUM OR EQUIVALENT 1.0 T IN 24 HRS	BOILER BLOWDOWN 17 T IN 24 HRS
NISHED BOARD &	TERMITE CHEMICAL · 5 T IN 24 HRS	
T OF PRODUCTS	FRESH PROCESS WATER · APPROX.	
	2400 TONS OR 400 G.P.M.	

hardboard-softboard plant.

moved into a press loader. This is a multi-deck rack with the number of openings corresponding to the number of openings in the platen press. In the wet process this is usually a 20-opening affair.

By one method of loading the cut boards move automatically into the various decks of a stationary rack by means of a tipple arrangement. When this rack is loaded the boards are moved simultaneously into a movable intermediate rack which has been connected to the stationary rack. This movable rack after being filled is moved to the press and the boards transferred in one operation into the press.

By another method of loading the rack being loaded from the machine is elevated a deck at a time until it is filled. The boards are then moved simultaneously inot the open press.

Because it is consolidated while it is wet, wet process board requires a screen on one side of it so that in drying the steam generated may escape. This leaves a permanent wire mark on one side of the board. Stock prepared for wet process board is free enough to permit this escape of steam during pressing. Thus it is unnecessary to refine the fibers to the degree required for insulating board.

Dry Process Hardboard

Stock for hardboard by the dry process may be prepared somewhat similarly to that prepared for wet process board. The fibrous mat is formed and pressed in the same manner as by the wet process. However, unlike the wet process the board for the dry process is passed through a long drier and dried to bone dryness or nearly so before it is placed in the platen press for consolidation into hardboard. The product before pressing is similar in appearance to insulation board. Pressures for dry process board are usually higher than for wet process board (1,000 to 1,500 psi.) as are the temperatures, 300° to 450° F. The pressing cycle is considerably less as it is possible to consolidate the board in as small a time interval as 1½ minutes. Usual pressing cycles are 2½ to 3 minutes.

Dry process hardboard is smooth on both sides as both of the press platens or caul plates used are smooth. Fiber prepared for dry process board is usually refined to a higher degree than for wet process board to allow for easier handling of the unconsolidated board. The quality of the pressed board depends on the quality of the unpressed board.

The amount of unreclaimable trim from board made by the dry process is about 3 per cent less than for the wet process.

While dry process board requires a drier for making the board, because of the shorter pressing cycle a press with fewer openings is required than is used for the wet process. Loading and unloading equipment also is usually not as complicated or costly.

Humidifier

In addition to equipment previously described it is essential in hardboard manufacture to provide a chamber wherein the board which is bone dry after pressing may be humidified to a moisture content of 5 to 6 per cent before being packaged. Unless this is done the dry board tends to warp unevenly as it picks up moisture from the air.

There is no standard method for humidifying the board. One method consists of unloading the boards from the press into buggies where they are placed on end with spaces between. Each buggy should contain a multiple of the number of openings in the press. The humidifier consists of a tunnel with tracks to guide the buggies full of board. To prevent the humidifier from being excessively long the tunnel may be wide enough to accommodate, for example, two or three pairs of tracks in parallel. It is convenient to have some sort of puller mechanism so that the full line of buggies can be moved toward one buggy at a time as they are periodically loaded from one end and unloaded from the other.

One company has an open tunnel with rollers along the bottom and wire spacers running lengthwise of the tunnel about 30 inches above the rollers. Boards are loaded on edge on the rollers two boards to a space. The rollers carry the board along slowly and they are unloaded by hand at the far end. Both ends of the humidifier are open and air is circulated upwards and downwards between the boards. The air is humidified in equipment either on top of the humidifier or beneath the floor.

Obviously a continuous roller deck humidifier would be ideal. However, with humidification running from 4 to 6 hours this would be a rather lengthy and expensive piece of equipment. For a very large production though a humidifier of this type might be feasible. Boards could be fed directly from the press into the humidifier with only a transfer in between.

In the normal humidifier the relative humidity is on the order of 80 to 85 per cent. The higher the temperature the more rapid is the rate of humidification. However, temperatures too high present operating problems not encountered in the lower range. It has been found practical to humidify at temperatures of 100° to 120° F.

Heat Treating

Heat treating of hardboard has been found practical to increase strength. The method heat treating may be similar to that for humidifying except that moisture is absent. Temperatures of 120° to 140° C. for 4 hours has been found to increase the strength of wet process board about 25 to 30 per cent.

Tempering

For some uses it has been found advisable to "temper" the hardboard. This tempering is accomplished by adding a resin or oils such as linseed, tung, soy bean or tallol. This additive may be combined with the pulp in the form of an emulsion or the boards may be dipped into tanks containing it. The impregnated board is heat treated in hot air chambers and care must be exercised due to the fire hazard.

Combination Plant

It may be advisable in some locations due to the available market to consider a plant in which it is possible to make both softboard and hardboard. Thus when the demand is low for hardboard, the plant can be used for making softboard or vice versa. One such combination plant is shown in *Figure 7*.

As in the manufacture of soft or insulation board it is necessary to use a drier, such a plant is equipped to manufacture hardboard by the dry process. Investment in a combination plant is, of course, not too much higher than for a plant equipped to make either the hard or soft product.

Plant and Process Considerations

In planning any type of mill for the manufacture of board there are a number of important considerations.

The available and future market is, of course, the prime consideration in planning for a mill. It is of no avail to make a good product unless it can be sold. The number of uses for both soft and hardboard is being materially increased and we may expect them to continue to increase as the methods for treating and converting improve. A better product and lower cost of manufacture will also permit these products to compete with existing products used for similar purposes.

Type of Continuity of Raw Material

The available raw material is a major consideration in selecting stock preparation equipment for making board. Also, it must be certain that the mill once established will not soon lack for easily available raw material within the price range which will enable it to make and sell board competitively. The amount of this raw material will also be of major importance in deciding the size of mill to be built.

Cost Consideration

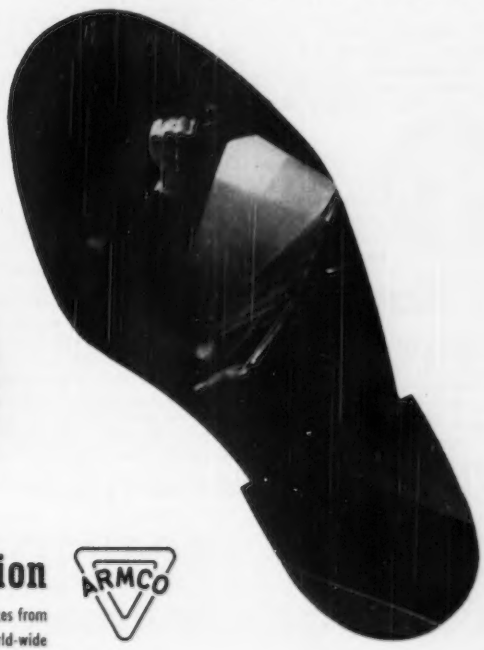
Available capital, of course, will determine to a large extent the size and type of board plant to be built. Some types of plants will require a heavier investment than others. This initial outlay, however, should be balanced against the overall cost of making board after the plant is built.

Power supply should be ample and power rates should be low enough to permit this portion of board cost to be in balance. Cost of power is also important in determining the type of equipment to be used.

Cost of labor is a large percentage of the expense of manufacturing board. Processes should be planned to operate with a minimum of labor.

Maintenance men take Stainless Steel

in Stride



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Should your maintenance men want the latest up-to-date information on fabricating stainless steel, write for a free copy of Armco's "Stainless Fabricating Tips." It's a valuable manual on the newest methods in cutting, forming, welding, riveting and other metal-working operations—and it's easy to understand.

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This labor cost will set to a large extent the size of mill as labor costs for low tonnage mills are usually higher than for the higher tonnage plants. Maintenance of equipment is a large factor in computing labor costs.

Other Factors

Availability and type of labor, distance to markets and other minor considerations should be given careful study before a plant is built for making board. As in other paper mill type operations the plant once established should prove to be a permanent one if the present growth rate of soft and hardboard usage is a satisfactory criterion.

BAILEY METER CO., manufacturer of instruments and controls, to meet increased demands for expert engineering services in power and process fields, has assigned five engineers to new branch office posts. all are graduates of the company's intensive training program which consists of classroom, factory and field training in the theory and practice of measurements and controls as applied to power and process problems.

The names and new business addresses of the five engineers are: P. K. Bolyard, 184 Pryor street, S.W., Atlanta 3, Ga.; George J. Dunegan, 424 Sharon Building, San Francisco 5, Calif.; L. F. Monahan, 1506 Kearney street, Denver 7, Colo.; R. E. Paulson, 7725 Ward Parkway, Kansas City 5, Mo.; O. M. Thompson, 2509 Carew Tower Building, Cincinnati 2, Ohio.

G. D. JENSSEN CO., INC., head office in the Electric Building, Watertown, N. Y., announced that Eugene De Luca will assume duties in charge of technical service and process development with that company.

LATEX AND RUBBER, INC., as of October 6, acquired the latex handling, storage and laboratory facilities located at 1075 Hull street, Baltimore 30, Md., formerly owned by Latex Distributors, Inc.

PACKAGE MACHINERY CO'S. president, Roger L. Putnam has revealed that the company may move from East Longmeadow, Mass. if the strike at the local plant continues much longer.

FOSTER D. SNELL, INC. announces that Lyman H. Allen, Jr., formerly assistant chief design engineer in charge of chemical process design with the American Viscose Corp. in Philadelphia, Pa., has been appointed Chief Engineer of Foster D. Snell, Inc., chemical and engineering consultants.

W. C. STEBBINS CO., INC. has elected Kathleen H. Stebbins president to succeed her husband, J. Reginald Stebbins, who died suddenly of a heart attack on August 21. Mrs. Stebbins will operate the company personally, and will be joined in the business by her son, William C. Stebbins II, a senior at Yale University, on the completion of his education. He will be the third generation to operate the company which was founded by his grandfather, W. C. Stebbins, over 50 years ago.

CANADIAN GENERAL ELECTRIC CO. has announced the appointment of H. R. M. Acheson as pulp and paper specialist in Montreal District. Widely-known throughout the paper industry, he becomes responsible for the sales engineering of the company's broad range of equipment, for pulp and paper companies which have operations in the province of Quebec.

H. R. M. ACHESON

THE SALES ENGINEERING CO., 91 Glen street, Glens Falls, N. Y., has been named a dealer for Allis-Chalmers motors and controls in Warren county. Irving M. Hoffman and Robert E. Dolan are partners in the engineering concern.

VICTORY BEATER RECORD

The Multi-Roll Controlled Flow Victory Beater, and Hudson's Palatka mill, which completed its first year of operation on August 20th, chalked up a record of performance that has set an all-time high for efficiency and economy.

Officials of the Palatka, Fla. mill of the Hudson Pulp and Paper Corp. state that the machine was in operation 24 hours a day, 7 days a week, during the entire period, with an average machine production of 180 tons per day. A power savings of nearly 35 percent is reported. A marked improvement in quality of the paper was noted.

Contracts for a $7 million expansion program at the Palatka mill include the purchase of two more triplex Victory Beaters, in addition to four Noble and Wood Special Unifiners.

GUM ROSIN AND STARCH

WASHINGTON, D. C.—Gum rosin totaling 100,000 drums was offered for October sale among other surplus commodities held by the Commodity Credit Corporation this week.

Prices for domestic sale will range from $7.15 per 100 lbs., net, Grades N through G; to $7.50 Grades X through WW, as is, storage yards, Georgia and Florida locations. The same lots were offered for sale for export at prices to be announced.

Other commodities included 600,000 pounds of potato starch, pearl type and 5,700,000 pounds, powdered type, in carload lots only, at $4.50 per cwt., f.o.b. Maine shipping points. The starch is packed in 200 lb. burlap bags, paper interlined for pearl and 100 and 200 lb. bags, powdered.

ANTI-TRUST SUIT

The Justice Department filed a civil complaint in United States District Court at Savannah charging the Savannah Cotton and Naval Stores Exchange and seven other corporations with violations of the federal anti-trust laws by conspiring to control, regulate and fix prices of gum turpentine and rosin.

SUSPEND EXPORT OF LINTERS

WASHINGTON, D.C.—Exports of cotton linters and cotton pulp have been indefinitely suspended, except for small quantities which may be allowed for strategic needs, the Commerce Department announced last week.

Action on linters was taken at the request of Agriculture Department, it was reported, for the purpose of protecting available supplies for defense needs. Licensing of such exports was imposed in September.

OLIN BUYS INTEREST IN HARWID

NEW YORK—Olin Industries, Inc., has purchased a substantial interest in the Harwid Co., Cambridge, Mass., a leading manufacturer of polyethylene film.

Olin's interest in polyethylene film will complement its sale of cellophane. Olin's plant for the production of cellophane is now being constructed at the Ecusta Paper Corp., subsidiary of Olin Industries, at Pisgah Forest, N. C.

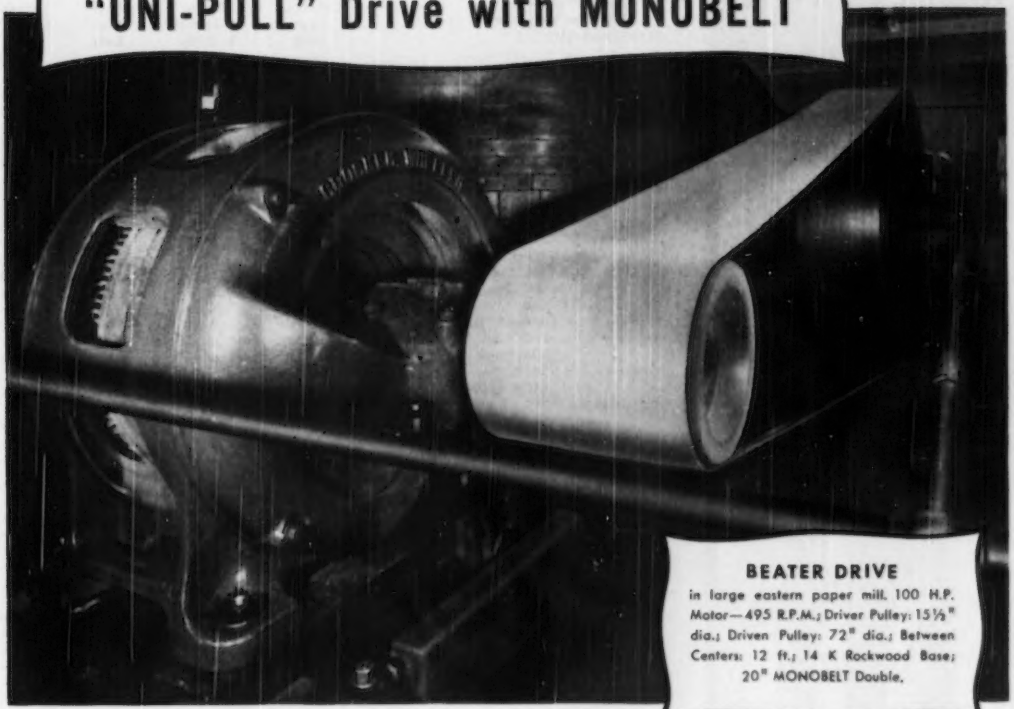
ORDER CONVEYING SYSTEM

NEW YORK — Trim conveying systems for Nos. 4, 5 and 6 supercalendar stacks at Corinth Mill of International Paper Co. have been ordered from the J. O. Ross Engineering Corp.

HEADS PROFESSIONAL ENGINEERS

WILMINGTON, Del. — John I. Bahr, chief engineer of the National Vulcanized Fibre Co., was elected president of the newly-organized Delaware Society of Professional Engineers at a meeting here this week.

"UNI-PULL" Drive with MONOBELT



BEATER DRIVE
in large eastern paper mill. 100 H.P. Motor—495 R.P.M.; Driver Pulley: 15½" dia.; Driven Pulley: 72" dia.; Between Centers: 12 ft.; 14 K Rockwood Base; 20" MONOBELT Double.

for Efficient Power Transmission . . . Long Life . . . Freedom From Trouble in MODERN *Paper Mill Drives*

"UNI-PULL" . . . the modern drive combining flat leather MONOBELT with a tension-controlling motor base . . . provides uniform pull *around* the pulleys and *across* the pulleys. It prevents excessive wear on bearings and assures the most efficient transmission of power by automatically maintaining a uniform tension even when changes in load occur. MONOBELT . . . the *patented*, waterproofed leather belt . . . insures maximum performance of the "UNI-PULL" drive. It retains its high frictional qualities throughout its entire life and absorbs shock loads and overloads. MONOBELT is tough, durable, has high horsepower capacity and will out-perform and out-wear ordinary belting. "UNI-PULL" drives with MONOBELT pull as a unit, eliminating the separate, uneven tensions of multiple-belt drives. All of these factors add up to more efficient transmission of power . . . longer life . . . and freedom from trouble in paper mill drives. It will pay you to investigate "UNI-PULL" with MONOBELT on your present drives as well as new installations. Ask your local distributor for the facts . . . or write directly to us.

Facts about MONOBELT

- Made from center portions of the finest hides
- First quality vegetable tanned leather
- Curried under exclusive ALEXANDER process which intensifies natural frictional qualities, increases tensile strength and eliminates abnormal stretch.

ALEXANDER BROTHERS

406 North 3rd St., Philadelphia 23, Pa.

Branches in Chicago • Charlotte • New York • Distributors in all principal cities

UNDERWRITERS
DEALERS
BROKERS

Industrial, Utility, Railroad Bonds

Preferred and Common Stocks

•

KIDDER, PEABODY & CO.

Founded 1865

Members
New York and Boston Stock Exchanges and New York Curb Exchange

NEW YORK BOSTON
PHILADELPHIA CHICAGO

Sales and Branch Offices

Albany Newport
Altoona Providence
Baltimore Reading
Lowell Scranton
Minneapolis Springfield
New Bedford Wilkes-Barre

New York Teletype NY 1-193

FINANCIAL RECORD

Oct. 17

PREFERRED STOCKS	Per Share Earnings: Calendar Year 1949	Per Share Earnings: 12 Mo. to Approx. 6/30/50	Indic. Annual Divid. Rate	Approx. Market Price
Armstrong Cork Co. $3.75 Cum.	$40.95*	$48.14	$3.75	$101¾
Armstrong Cork Co. $4.00 Cum. Conv.	40.95*	48.14	4.00	114
Celotex Corp. 5% Cum.	6.80c	8.75	1.00	16¾
Champion Paper & Fibre $4.50 Cum.	60.09f	89.39	4.50	105½
Container Corp. of Amer. 4% Cum.	89.52	104.60	4.00	104½
Crown Zellerbach $4.00 Cum.	54.38c	61.85	4.20	127½
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	10.93	12.24	2.50	53⅜
Flintkote Co. $4 Cum.	62.70	71.81	4.00	103½
Robert Gair Co., Inc. 6% Cum.	13.79†	15.86†	1.20	18½
International Paper Co. $4 Cum.	224.55	264.19	4.00	106¾
Kimberly Clark Corp. 4% Cum.	85.27	117.03i	4.50	106¾
MacAndrews & Forbes 6% Cum.	61.59	62.97	6.00	143
Mead Corp. 4½% Cum.	51.37	88.30a	4.25	91½
Mead Corp. 2% Cum. Conv. 2nd	21.35*	36.20a	2.00	61¾
Paraffine Cos. Inc. 4% Cum. Conv.	56.46	59.81	4.00	98¾
Rayonier Inc. $2 Cum.	9.54	12.09	2.00	34½
St. Regis Paper Co. 4.40% 1st A	30.74	36.61	4.40	95¼
Scott Paper Co. $3.40 Cum.	51.15*	62.16*	3.40	98¼
Scott Paper Co. $4.00 Cum.	51.15*	62.16*	4.00	106¾
Sutherland Paper 4¼% Conv.	46.92	59.24	4.25	114½
U. S. Gypsum Co. 7% Cum.	283.37	340.24	7.00	183½
United Wallpaper Inc. 4% Cum. Conv.	2.14	(d)15.98	2.00	23¾
West Virginia Pulp & Paper 4½% Cum.	61.28c	61.06i	4.50	110¾
COMMON STOCKS				
APW Products Co.	(d)0.81	(d)0.01	—	4⅛
American Writing Paper Corp.	.04	0.50	—	7¾
Armstrong Cork Co.	6.57	7.84	$3.00	46⅞
Celotex Corp.	1.65c	2.20	1.00	15⅛
Certain-Teed Prods. Corp.	2.84	3.24	1.00	14⅞
Champion Paper & Fibre	5.15f	8.16	2.00	45⅜
Congoleum Nairn Co.	3.04	2.70	2.00	24⅜
Container Corp. of America	8.46	10.27a	4.00	62⅛
Crown-Zellerbach	6.02c	6.84	2.00	42⅜
Dixie Cup Co.	7.44	8.58	1.50	45½
Eastern Corp.	0.04	1.64	(h)	18¾
Flintkote Co.	4.33	4.95	2.50	25¼
Robert Gair Co., Inc.	2.11†	2.30†	0.70	10½
Great Northern Paper Co.	4.87	3.75	2.80	45¾
International Paper Co.	7.12	8.14	2.50	47¼
Johns-Manville Corp.	4.83	6.16	2.50	44⅜
Kimberly Clark Corp.	5.29	6.66i	1.80	42⅞
MacAndrews & Forbes Co.	3.64	3.77	3.00	38⅜
Marathon Corp.	3.29c	4.13i	1.40	34⅞
Mead Corp.	4.10	7.32a	1.60	31
National Container Corp.	0.95	1.34	0.60	10¼
Paraffine Cos. Inc.	0.85	0.90	0.60	16⅜
Rayonier, Inc.	4.75	6.36	2.50	43⅝
Ruberoid Co.	8.72	9.06	3.25	50¾
St. Regis Paper Co.	0.91	1.11	0.60	11⅝
Scott Paper Co.	6.07	7.38	3.60	41¾
Sutherland Paper Co.	4.62	5.64	2.75	43⅜
Union Bag & Paper Corp.	5.01	5.16	2.50	35⅜
United Board & Carton	(d)1.61b	0.58j	—	14½
U. S. Gypsum Co.	13.51	16.29	9.00	110½
United Wallpaper	(d)0.01	(d)0.55	—	3
West Virginia Pulp & Paper	8.58c	8.36i	5.00	65¾

(a) 12 months to approximately 9/30/50
(b) Year ended 11/13/49
(c) Year ended 1/31/50
(d) Deficit
(f) 9 months to 12/31/49
(g) 12 months to approximately 4/30/50
(h) Declared 25c payable Sept. 1, 1950.
(i) 12 months to 7/31/50
(j) 12 months to 5/31/50.
(†) Incluues domestic and Canadian subsidiaries and 60% equity in Southern Paperboard Corp.

Fraser Companies Ltd's. earnings are rising sharply with the increase in pulp prices and with the profitable operations of the new bleached sulphate mill, according to a review of Jones Heward & Co., who stated that Fraser's earnings for the third quarter were probably close to an annual rate of $8 a share and that they should be still higher for the final quarter.

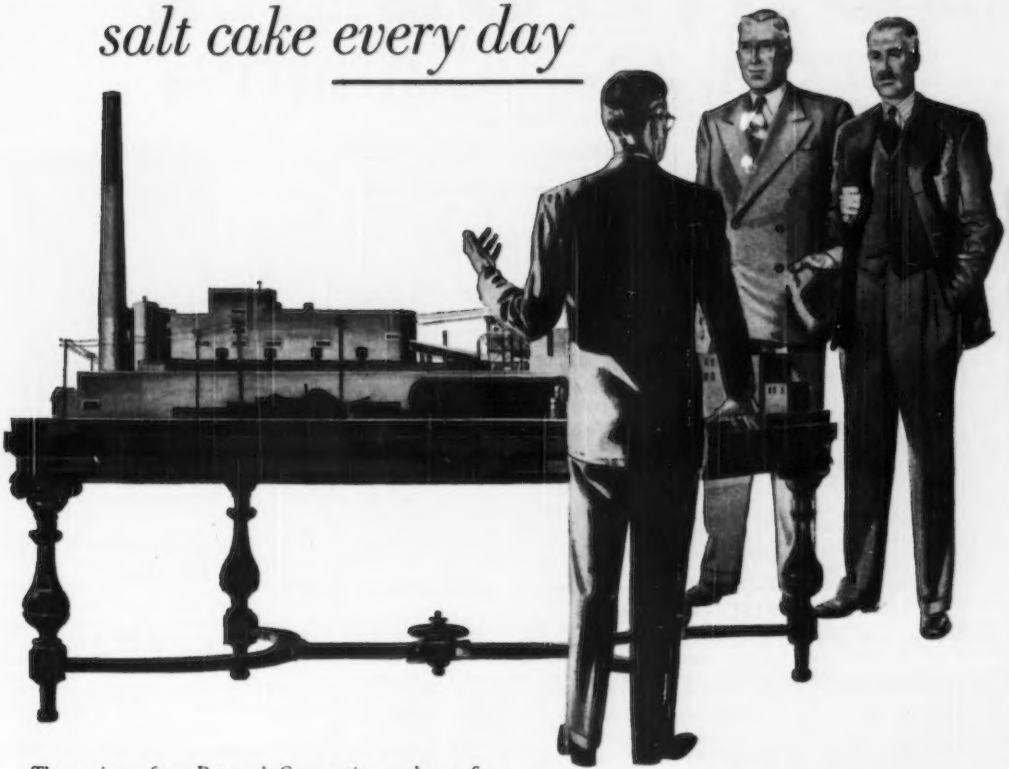
Earnings for the full year, however, may not greatly exceed $6 a share as the first six months' prices were relatively low and the new mill had not yet reached effective operations.

Fraser Companies Ltd. earned $2.11 per share for the first half of 1950 compared with $1.55 for the same period last year. Net for 1949 was $3.63 as against $7.55 in 1948.

Jones Seward & Co. states the medium term outlook for Fraser appears favorable despite lower exchange premium on the company's sales in the United States.

A RESEARCH CORPORATION COTTRELL

will save you $1000 to $1500 worth of salt cake every day



The engineer from Research Corporation spoke confidently. He had studied the equipment layout, and noted that the mill had a capacity of 1,000 tons of pulp per day. From his experience and specialized knowledge he knew that he could safely anticipate a minimum recovery of 100 pounds of salt cake for each ton of pulp produced—total: 50 tons of salt cake per day—value: $1,000.00 to $1,500.00 per day dependent upon salt cake cost prevailing at the plant.

Performance like this is the result of over 35 years of experience combined with careful engineering appraisal, attention to details and a remarkably efficient method. These, plus equipment which gives recoveries of 90 to 99%, are responsible for outstanding records of recovery.

If you are losing your chemicals through the stack in a soda or sulphate mill investigate the Research Corporation Precipitator.

RC-198

Research Corporation Installations

47 CARBON BLACK PLANTS
200 METALLURGICAL INSTALLATIONS
203 ACID PLANTS • 34 PAPER MILLS
262 DETARRING INSTALLATIONS
195 POWER STATIONS
71 STEEL PLANTS • 95 OIL REFINERIES
AND MISCELLANEOUS INSTALLATIONS

RESEARCH CORPORATION

405 Lexington Avenue, New York 17, N. Y.
122 South Michigan Avenue, Chicago 3, Illinois

PRICES

The prices below reflect market quotations at the mill level on standard grades. Most orders accepted however, at price prevailing on date of shipment. Does not include spot offerings.

NEW YORK
Delivered Ports

Standard News, per ton—

Rolls, contract	$100.00/110.00
Sheets	115.00/ —

F.o.b. Mills. C.l. Frt. allowed, dock, N. Y.

Kraft— per cwt., 40# base wgt.

Standard Wrapping Rolls	$7.00/$7.25
No. 1 Wrapping Rolls	7.75/ 8.00
Standard Bag	6.75/ 7.00

Tissues—per ream 24x36 (480) 10 lbs. 2500 lbs. or more

Wh. No. 1 Frd	$1.60 / —
Wh. No. 1 MG	1.60 / —
Wh. No. 1½	1.55 / —
Wh. No. 2	1.45 / —
Kraft Non-Tar	
White Non-Tar	

Toilet—per case of 100 rolls—1 M sheets

Unbleached 4½x4½	$5.90/ —
Unbleached 4½x5	5.85/ —
Bleached 4½x4½	7.10/ —
Bleached 4½x5	8.80/ —
Per Case of 50 rolls—2000 sheets	
Unbleached 4½x4½	$5.90/$6.25
Bleached 4½x4½	6.95/ —
Per Case of 100 rolls—1000 sheets	
Facial, 4½ x 5, 2 ply	$8.95/$9.45

Paper Towels—per case of 3750.

Wh. Jr. M'tif'd 9½x9½	$5.65
Br. Sr. M'tif'd 10x12	4.00
Br. Jr. M'tif'd 9½x9¾	3.50
Br. Jr. Sgl. fold 10x10¾	3.35
Bldd. 7½ x 11, 24/25 rolls	$3.95/$6.25

Manila, per cwt.

No. 1 Jute Tag sheets*	$15.55/$17.55
Reg. Jute M. F. 40-lb., sheets*	14.00/ 16.00
Wrapping Manila	8.75/ 10.50
Printing Manila	10.00/ 11.00

* Less usual allowance for rolls.

WORLD WOOD PULP MARKETS

Fourth Quarter Contract Prices, Per Short Air-Dry Ton

Varying freight allowances — Atlantic Ports

	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$75.00/ —	$70.00/ 75.00	†$82.50/ —		
Sideruns Pulping News	70.00/ —	70.00/ 75.00			
Soda, Bleached	130.00/ —	130.00/ —			
Sulphate, Bleached	128.00/167.50	141.00/ —	*165.00/167.50		Competitive
Sulphate, Unbl'd North'n		110.00/120.00	*135.00/165.00		
Sulphate, Unbl'd South'n	110.00/160.00				
Sulphite Bldd. (S'ftw'd)	128.00/145.00	135.00/138.00	*160.00/ —		Competitive
Sulphite, Bldd. (H'dw'd)	145.00/ —				
Sulfite, Semi-bldd.	128.00/ —				
Sulphite, Unbleached		117.00/120.00	*138.00/165.00		
Sulphite, Unbl'd (Glassine)		121.00/ —	*142.00/150.00		

* On dock. † Delivered.

Gummed Tape—per bdl., 500 bdls. or more.

90-lb. 375 ft. GSI	$6.60/ —
60-lb. 600 ft. GSI	6.60/ —
35-lb. 800 ft. GSI	7.59/ —
35-lb. 500 ft. GSO	5.70/ —

Boards, per ton—

Filled News	$97.50/ —
Plain Chip	90.00/ 95.00
Bldd. Mls. L-d. Chip	120.00/ —
White Pat. coated .020	140.00/ —
Kraft Liners 42 lb.	105.00/ —
Kraft Corr. .009	110.00/ —
Binders Boards	135.00/ —

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$64.55/$69.60
100% Rag	‡ 56.95/ 57.30
75% Rag	‡ 43.70/ 44.15
50% Rag	‡ 35.60/ 35.95
25% Rag	‡ 29.75/ 30.00

Ledgers	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$65.15/$66.35
100% Rag	‡ 58.20/ 58.75
75% Rag	44.95/ 46.20
50% Rag	‡ 36.90/ 37.30
25% Rag	‡ 31.00/ 31.35

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
Watermarked	$18.15/$19.05
Plain	17.10/ 17.45

Ledgers	4 Ctns.
	per cwt.
Watermarked	$19.50/$20.30
Plain	18.55/ 18.75

White Book

Conversion Coated	Case
	per cwt.
No. 1	$21.65/$21.75
No. 2	20.15/ 20.40
No. 3	19.65/ —
Machine Coated	
No. 1	$16.90/ 17.15
No. 2	14.90/ 15.15
Uncoated	
No. 1 Antique (Watermarked)	$17.15/ 18.65
Offset	16.15/ 16.90
A Grade E. F.	16.15/ —
A Grade S. C.	16.65/ 16.90
B Grade E. F.	15.40/ —
B Grade S. C.	16.15/ —

‡ Indicates a price change.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) ALL PRICES NOMINAL. SPOT OFFERINGS OR SPECIAL PACKINGS NOT INCLUDED.

	New York	Philadelphia	Boston	Chicago
	Oct. 11	Oct. 13	Oct. 14	Oct. 16
No. 1 Mixed Paper	$23.00/ 27.00	$24.00/ 25.00	$22.00/ —	$25.00/ —
Boxboard Cuts	23.00/ 25.00	20.00/ 25.00	19.00/ —	26.00/ —
Mill Wrappers	22.00/ 29.00	25.00/ 30.00	24.00/ 29.00	24.00/ —
No. 1 News	26.00/ 30.00	25.00/ 30.00	26.00/ —	27.00/ —
Over-issue News	29.00/ 32.00	26.00/ —	25.00/ 27.00	30.00/ —
Corrugated Containers	35.00/ 37.00	32.00/ 36.00	33.00/ 35.00	35.00/ —
New Corrugated Cuts	40.00/ 45.00	35.00/ 40.00	35.00/ 40.00	45.00/ —
Double Kraft Ld. Corr. Cuts	75.00/ 80.00	55.00/ 58.00	70.00/ 80.00	77.50/ —+
100% Kraft Corr. Cuts	85.00/ 90.00	— / —	— / —	95.00/ —
Used Kraft Bags	60.00/ 75.00	60.00/ —	50.00/ —	55.00/ —
No. 1 Brown Kraft Paper	55.00/ 60.00	65.00/ —	50.00/ 60.00	55.00/ —
Super Resorted Br. Kraft	62.50/ 70.00	80.00/ —	65.00/ 70.00	65.00/ —
New Br. Kraft Env. Cuts	110.00/125.00	100.00/ —	110.00/115.00	90.00/ —
New Br. Kraft Cuts	80.00/ 90.00	100.00/ —	85.00/ 90.00	85.00/ —
No. 1 Gdwd Shvs.	60.00/ 65.00	40.00/ 45.00	60.00/ —	40.00/ —
White Newsblanks	85.00/100.00	75.00/ —	80.00/ —	70.00/ —
No. 1 Flyleaf Shvs.	70.00/ 75.00	55.00/ —	65.00/ 75.00	80.00/ —
No. 1 Soft Wht. Shvs.	150.00/160.00	120.00/125.00	110.00/115.00	125.00/ —
Super Soft Wht. Shvs.	160.00/170.00	135.00/ —	115.00/125.00	135.00/ —
Hd. Wht. Shvs.	160.00/170.00	150.00/150.00	125.00/140.00	140.00/ —
Hd. Wht. Env. Cuts	175.00/ —	160.00/170.00	140.00/170.00	150.00/ —
New Manila Env. Cuts	100.00/120.00	100.00/ —	90.00/100.00	90.00/ —
Col. Tab Cards	70.00/ 80.00	70.00/ —	55.00/ 60.00	70.00/ —
Manila Tab Cards	115.00/130.00	125.00/ —	100.00/110.00	110.00/ —
No. 1 Mixed Ledger	60.00/ 70.00	65.00/ —	60.00/ —	70.00/ —
White Ledger	90.00/100.00	95.00/100.00	70.00/ 80.00	100.00/ —
No. 1 Book & Mag.†	32.00/ 33.00	25.00/ 35.00	30.00/ 35.00	28.00/ —
No. 1 Rep'd. Hvy. Books‡	45.00/ 50.00	23.00/ 45.00	40.00/ 50.00	45.00/ —

* Delivered. † Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood.

Rag Market

New Domestic Cotton Cuttings
(Prices to Dealers, F.o.b. Ship. Pt.)

ALL PRICES NOMINAL

No. 1 White Shirts	$17.00/$18.00
No. 1 Unbldd. Muslins	15.50/ 17.50
Bldd. Canton Flannels	15.00/ 16.00
No. 1 Lt. Silesias	10.00/ 11.00
No. 1 Lt. Prints	7.50/ 8.50
Wht. Bk. Blue Overalls (Bldable)	11.00/ 12.00
No. 1 Blue Overalls	5.00/ 5.25
Fancy Shirts	6.00/ 6.50
No. 1 Washables	5.00/ 5.50
Suntan Khaki Cuts	9.00/ —
Mixed Khaki Cuts	6.00/ 7.00
Corduroy Cuts	4.50/ 5.00
Cottonades	4.50/ 5.00
Bldd. Underwear Cuts	16.00/ 17.00
Unbldd. Underwear Cuts	15.00/ 16.00

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

ALL PRICES NOMINAL

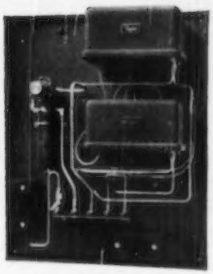
	Per 100 lbs.
Mixed White	$4.50/$5.00
Cotton Pants & Overalls	3.75/ 4.25
Thirds and Blues, Repacked	3.50/ 3.75
No. 1 Roofing Rags	2.40/ 2.65
No. 2 Roofing Rags	2.00/ 2.25
No. 3 & 4 Roofing Rags	1.90/ 2.15
Roofing Bagging	1.90/ 2.15

New Foreign Cotton Cuttings
(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings	$4.25/$4.75
New Mixed Cuttings	4.50/ 5.00
Light Silesias	7.50/ 8.00
Light Flannelettes	7.50/ 8.00
New White Cuttings	nominal
New Unbleached Cuttings	nominal

±1% HUMIDITY CONTROL

in Ohio Boxboard Test Lab



TRANSAIRE with Speed-Act. on a Taylor Wet-and-Dry Bulb Temperature Controller.

TAYLOR offers you ±1% *relative humidity* control in your test labs or wherever you need it in your mill. This amazingly close humidity control is achieved by Taylor FULSCOPE* Recording Wet-and-Dry Bulb Controllers, using for the measuring system TRANSAIRE* Temperature Transmitters with Speed-Act* (see cut, left). Wet bulb temperature goes up correspondingly with dry bulb, so that relative humidity is maintained within ±1%.

Other ways Taylor can help you keep quality up and costs down:

Pulp Grinding—Accurate temperature control for maximum production, uniform quality and color, full tensile strength of fibre, and with a minimum of short fibres, rejects and stone breakage.

Pulp Digesting—Accurate temperature control of properly saturated chips. Accurate pressure control according to precise schedule. Result—No. 1 pulp (uniform color, bleachability, strength, freeness, and fewer rejects).

Beaters—Accurate beater roll pressure control for increased beating capacity, big power savings per ton, more uniform stock in terms of hydration and freeness.

Press Roll—Maximum roll pressure needed for each set of operating conditions without damaging sheet, felt or rolls. More uniform sheet density, opacity and calipre at lowest cost per ton.

Bleaching (a) Force-balance level instruments, (b) Temperature and pressure controllers and valves, (c) Push-button and hand control for pump motors, etc., (d) Level Recorder for stock water chests (e) Recorders and valves for mixers, etc.

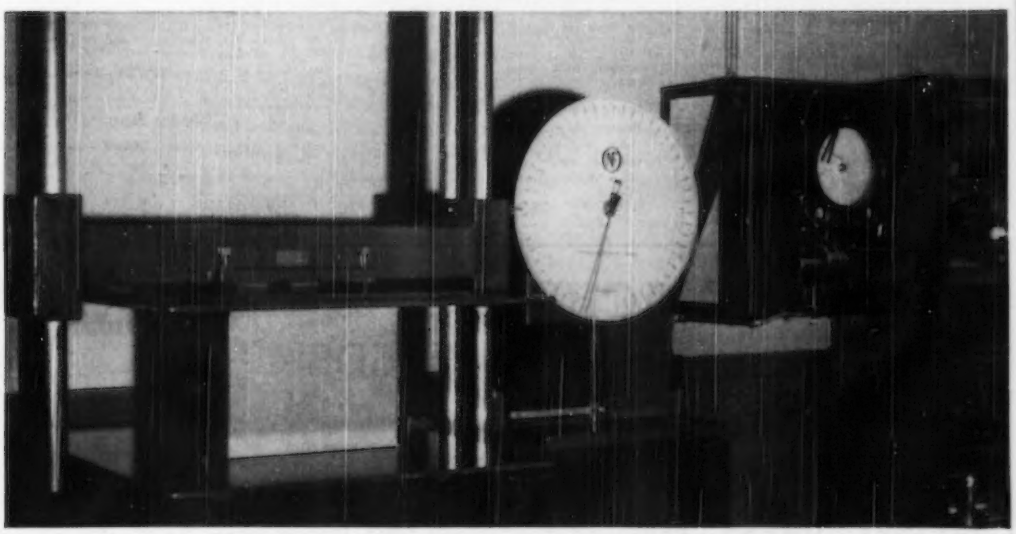
Ask your Taylor Field Engineer! Or write Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada.

• • •

Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.

*Trade-Mark

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST



Laboratory at Ohio Boxboard Co., Rittman, Ohio, where Taylor Controls hold relative humidity within ±1%, to maintain standard atmospheric conditions for test purposes.

Fancy Shirt Cuttings	6.00/ 7.00
Light Prints	6.00/ 7.00
Bleachable Khaki, No. 1	5.50/ 6.00
Unbl. Khaki, No. 1	4.90/ 5.00

Old Foreign Rags

(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	$6.50/$7.50
No. 2 White Cottons	5.50/ 6.00
No. 3 White Cottons	4.00/ 4.50
No. 4 White Cottons	3.50/ 3.75
Extra Light Prints	4.50/ 5.00
Old Light Prints	4.00/ 4.25
Med. Light Prints	3.50/ 3.75
Dutch Blue Cottons	3.75/ 4.00
Checks and Blue	3.00/ 3.50
Linsey Garments	2.75/ 3.00
Dark Cottons, European	2.25/ 2.50
Dark Cottons, Egyptian	2.15/ 2.30
Old Shopperies	2.10/ 2.25
New Shopperies	2.25/ 2.50

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$7.00/$8.00
Domestic Gunny, No. 1	7.00/ 8.00
Heavy Wool Tares	6.75/ 7.50
Foreign Manila Rope	4.25/ 4.50
Domestic Manila Rope	5.25/ 5.50
Jute Strings	6.25/ 6.50
No. 1 Sisal Strings	3.50/ 4.25
Mixed Strings	nominal
Paper Mill Tares	5.25/ 5.75
No. 1 Scrap Burlap	
Foreign	4.75/ 6.00
Domestic	5.50/ 6.50
Austr. Wool Pouches	6.75/ 7.50
New Burlap Cuttings	7.00/ 7.50

MATERIALS

Aluminum, sulfate:
- coml. bags, wks. ..... cwt. 1.65
- iron-free c.l. 2.75

Alcohol, ethyl:
- tax free, dms. c.l. ..... gal. .62 / .97
- dedl. East Miss.

Casein, acid-prec.:
- dom. sh. pt. c.l. ..... lb. .37 / .38
- imp. ex dock ..... lb. .33 / .33½

Caustic soda:
- c.l. wks. solid, 76%, cwt. 3.35
- flak. & grd. 100-lb. drums ... 3.75
- liquid 50% tanks 2.55
- liquid 70% tanks .. 2.65

China clay:
- dom. air-float. filler, c.l. wks. ton 10.00
- water-washed 11.00
- coating ..... 16.00 /30.00
- imported, ex whse. ... short ton 15.20 /28.35

Chlorine:
- single-unit tanks, works .. cwt. 2.70
- multi-unit ..... cwt. 3.20 / 4.40

Formaldehyde:
- USP, inh. dms, c.l. wks. ... lb. .0600/ .0625
- l.c.l. E. wks ..... .0650/ .0675

Fuel oil:
- Bunker C, No. 6 Cal. bvy tanks, refinery ..... bbl. 1.40 / 1.60
- light ..... bbl. 2.05 / 2.10

Hydrogen peroxide:
- USP, 35% cbys. E. of Miss. lb. .24½/ .25½

Lime:
- hydrated, bags, wks. Buffalo ton 13.50

Rosin:
- B gum, drms, c.l. Savan. . cwt. 4.10
- G, do. ..... cwt. 6.60
- H, I, K ..... cwt. 7.20
- FF wood, do. ..... cwt. 5.90

Rosin size:
- 70%, gum & pale grds, tank cars, south, sh. pt. ..... cwt. 6.25 / 6.45

Salt cake.
- dom. bulk, c.l. wks. ..... ton 17.00
- wks. frt. all. ..... ton 20.00 /22.00

Soda ash:
- light, 58%, bags, wks. ... 1.50
- bulk ..... cwt. 1.20

Sodium silicate 40°:
- turbid, c.l. wks. ..... cwt. 1.20
- l.c.l. wks. ..... 1.55 / 1.95

Sodium peroxide:
- dms. c.l. E. of Miss. ..... lb. .19
- l.c.l. do. ..... lb. .19½/ .20

Soybean, protein:
- chem. isol, wks. c.l. ..... lb. .24 / —
- Cinn. and Chic.

Sulfuric acid:
- 60° Be. cbys. cl. wks. ... cwt. 1.75 / —
- l.c.l. wks. ..... cwt. 2.05 / 2.60

Sulfur:
- crude, c.l. mines, contract, long ton 18.00 /22.00
- f.o.b. vessels Gulf ... 19.50 /23.50
- Export, f.o.b. Gulf ... 22.00 /25.00

Sulfur dioxide:
- liquid, coml. cyl. wks. ..... lb. .09
- multi-unit cars ..... lb. .0535

Starches:
- pearl corn, bags, c.l. Chic. . cwt. 5.47 / —
- white dextrines, c.l. Chic. . cwt. 6.74 / —
- potato, Idaho, c.l. wks. ... cwt. 5.00 / —
- potato, Maine, c.l. wks. ... cwt. 5.00 / —
- tapioca, conv. dextrines .. cwt. 6.75 / 7.25
- medium grds. Gulf and East Coast ports ..... 5.50 / 6.25
- low, Siam, on dock N. Y. .... 4.75 / 5.25

Talc:
- domestic, 50-lb. sacks, c.l. wks. ..... ton 25.00 /30.00

Titanium dioxide:
- anastase, c.l. deld., bags. ... lb. .19½
- l.c.l. deld. ..... lb. .20 / .20½
- rutile, c.l. deld. .. .. lb. .21½
- l.c.l. deld. ..... lb. .22½

N.B.: For special market conditions, see *Trends*.

IMPORTS

IMPORTS AT NEW YORK

Week Ending Oct. 14

Newsprint

R. A. Olsen, G.T.D., Donnacona, 375 rolls.
N. Y. Journal American, Markland, Liverpool, N.S., 880 rolls.
N. Y. Daily Mirror, Markland, Liverpool, N.S., 198 rolls.
N. Y. Herald Tribune, Markland, Liverpool, N.S., 1238 rolls.
N. Y. World Telegram Sun, Markland, Liverpool, N.S., 611 rolls.
Buffalo Color Press, Markland, Liverpool, N.S., 320 rolls.
Brooklyn Daily Eagle, Markland, Liverpool, N.S., 443 rolls.
Brooklyn Eagle Press, Markland, Liverpool, N.S., 42 rolls.
Trade Union Service, Inc., Markland, Liverpool, N.S., 120 rolls.
W. D. Peck, Markland, Liverpool, N.S., 146 rolls.
Price & Pierce, Ltd., Markland, Liverpool, N.S., 150 rolls (mutilated).
Washington Post, (Alexandria, Va.), Markland, Liverpool, N.S., 2775 rolls.
Alexandria Gazette, (Alexandria, Va.), Markland, Liverpool, N.S., 56 rolls.
Washington Daily News (Alexandria, Va.), Markland, Liverpool, N.S., 607 rolls.
Journal Publishing Co. (Alexandria, Va.), Markland, Liverpool, N.S., 54 rolls.
Haynes Lithographing Co., Markland, Liverpool, N.S., 180 rolls.
R. A. Olsen, Kermic, Donnacona, 330 rolls.
Daily Mirror, Newscarrier, Donnacona, 374 rolls.

Parchment Paper

Dingelstedt & Co., American Importer, Bremen, 8 cs.

Serviettes

(———), Georgic, Liverpool, 9 cs.

Baryt Paper

R. Wilson Paper Corp., American Importer, Bremen, 23 cs.
F. C. Strype, American Importer, Bremen, 16 cs., 15 crates.
W. Reimerdes, American Importer, Bremen, 2 pcls.
W. Reimerdes, American Flyer, Bremen, 16 cs., 1 pcl.

Glassine Paper

Hartog Ruf, American Importer, London, 113 rolls.

Wallpaper

C. A. Haynes & Co., American Reporter, London, 29 bls., 2 cs.

MEISEL MACHINERY IS HELPING IN ALL FIELDS

Cigarette **Wax** **Photographic** **Jet Propulsion**
Condenser **Grease Proof** **Snap-out Forms** **Aero-engine Parts**

MEISEL PRESS MFG. CO. 950 Dorchester Ave., Boston

Bleach Liquor Prepared in 30 Minutes...

Preparing bleach liquor by introducing chlorine into excess milk of lime and waiting for it to settle is a time consuming process. In addition, it entails an expensive outlay for settling tanks and large storage facilities, the inconvenience of waiting and of sludge washing to say nothing of high labor costs. Nor can clear bleach liquor be used to buffer the bleaching operating beyond the solubility of lime

These weaknesses in the preparation of bleach liquor were of concern to Hooker Technicians who realized that economies in pulp and paper production help Hooker as well as the industry. After a thorough investigation, Hooker Technicians, working with the pulp and paper industry, showed how a bleach liquor could be prepared so as to be used without settling and with resulting economies in equipment, labor and time. The key to this process is a low cost but efficient screen for the removal of all but the finest of the insoluble particles of lime before chlorination. Also important to the process is the agitation of the lime during chlorination and storage.

Coincidentally with the development of this process and its equipment, Hooker Technicians suggested the use of this same type of screen for introducing clean lime for "liming" in the chlorination stage.

● Hooker Bulletins 201 and 242 are devoted to a discussion of the production and use of unsettled bleach liquor and the equipment for this process. They are available when requested on your company letterhead.

HOOKER ELECTROCHEMICAL COMPANY
6 UNION STREET • NIAGARA FALLS, N. Y.
New York, N. Y. • Wilmington, Calif. • Tacoma, Wash.

HOOKER CHEMICALS

7-377 **Caustic Soda Muriatic Acid Sodium Sulfide Paradichlorbenzene Chlorine Sodium Sulfhydrate**

Writing Paper

H. W. Robinson & Co., American Importer, London, 5 cs.

Filter Paper

H. Reeve Angel & Co., Inc., American Importer, London, 28 cs.
H. Reeve Angel & Co., Inc., American Reporter, London, 23 cs.

Paperhangings

C. A. Haynes & Co., American Importer, London, 54 bls.

Drawing Paper

H. Reeve Angel & Co., Inc., American Importer, London, 2 cs.
H. Reeve Angel & Co., Inc., American Reporter, London, 2 cs.
Lansen Naeve Corp., Washington, Havre, 16 cs.

Tissue Paper

B. F. Drakenfeld & Co., American Miller, Liverpool, 71 cs. (gauze carbonizing).
B. F. Drakenfeld & Co., Georgic, Liverpool, 13 cs. (gauze carbonizing), 3 cs. (pottery).

Gummed Paper

B. F. Drakenfeld & Co., American Miller, Liverpool, 23 drums, 44 cs.
B. F. Drakenfeld & Co., Georgic, Liverpool, 9 cs., 5 drums.

Printing Paper

Stevens Nelson Paper Corp., American Reporter, London, 2 cs.
Oxford University Press, Georgic, Liverpool, 9 cs.

Tracing Cloth

(———), Georgic, Liverpool, 8 cs. (cotton).

Baryta Coated Paper

E. I. Du Pont de Nemours & Co., American Reporter, London, 11 rolls.

Stencil Paper

Elliott Addressing Machine Co., Knut Bakke, Yokohama, 20 cs.

Paper Towels & Napkins

H. W. Robinson & Co., American Reporter, London, 3 cs. (towels), 1 cs. (napkins).
Great Lakes Press, Mormacsurf, Copenhagen, 86 ctns. (napkins).

Wrapping Paper

Jay Madden Corp., Vretaholm, Rauma, 196 rolls (sulphate), 194 rolls (sulphite).
Resolute Paper Products Corp., Vretaholm, Rauma, 113 rolls (sulphite).
Hartog Ruf, Extavia, Trieste, 18 rolls.

Boxboard

Jay Madden Corp., Vretaholm, Rauma, 188 rolls, 10 bls.
Jay Madden Corp., Vretaholm, Kotka, 61 rolls.

Miscellaneous Paper

American Express Co., American Importer, London, 100 rolls.
Coty, Inc., De Grasse, Havre, 4 cs.
Stevens Nelson Paper Corp., Tungus, Kobe, 14 cs.
H. S. Dorf, Extavia, Venice, 2 cs.
Stevens Nelson Paper Corp., Knut Bakke, Yokohama, 4 cs.

Rags, Baggings, etc.

Loumar Textile By Products Co., American Chief, Manchester, 67 bls. old bagging.
E. Butterworth & Co., Inc., American Chief, Manchester, 156 bls. bagging.
Chase National Bank, American Chief, Glasgow, 86 bls. paperstock.
Castle & Overton, Inc., American Chief, Glasgow, 170 bls. paperstock.
(———), Cote du Nord, Naples, 78 bls. rags.
E. Lang, Jessie Maersk, Rouen, 67 bls. jute bagging, 98 bls. scrap bagging.
(———), Jessie Maersk, Rouen, 40 bls. rags.
R. Blank, Jessie Maersk, Rouen, 103 bls. rags.
A. de Vries Trading Corp., Jessie Maersk, Rotterdam, 115 bls. scrap bagging.
Midwest Waste Material Co., Jessie Maersk, Antwerp, 102 bls. bagging, 7 bls. paperstock.
A. de Vries Trading Corp., Jessie Maersk, Antwerp, 163 bls. bagging, 137 bls. jute rags, 140 bls. paperstock.
L. Gottlieb, Jessie Maersk, Antwerp, 60 bls. bagging.
Bankers Trust Co., Cape Nome, Rotterdam, 58 bls. old rags.
A. de Vries Trading Corp., Cape Nome, Rotterdam, 74 bls. scrap bagging.
(———), Cape Nome, Rotterdam, 93 bls. bagging.
J. P. Fleissig, Cape Nome, Rotterdam, 62 bls. new cuttings.
(———), Cape Nome, Rotterdam, 23 bls. rags.
Castle & Overton, Inc., American Importer, London, 86 bls. paperstock.
J. Stein, Uruguay, Buenos Aires, 52 bls. rags.
J. Eisenberg, American Reporter, London, 65 bls. cotton rags.
Acadia Co., American Reporter, London, 77 bls. cotton rags.
E. J. Keller Co., Inc., American Reporter, London, 42 bls., 13 coils paperstock.
Manufacturers Trust Co., Georgic, Liverpool, 84 bls. bagging.

Old Rope

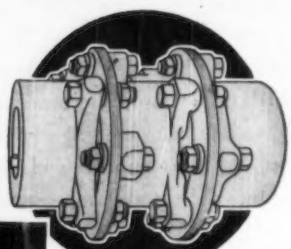
H. Leeds, Cape Nome, Rotterdam, 219 bls., 82 ctns.

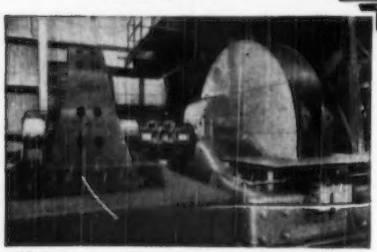
THOMAS *Flexible* ALL METAL COUPLINGS

FOR THOSE TOUGH PAPER MILL DRIVES

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

Thomas Couplings have a wide range of speeds, horsepower and shaft sizes:
½ to 40,000 HP
1 to 30,000 RPM





153" Sumner Iron Works Chipper—1500 HP @ 277 RPM—Soundview Pulp Co., Everett, Wash.

OTHER CHIPPER INSTALLATIONS
PUGET SOUND PULP & TIMBER CO., Bellingham, Wash.
CROWN-ZELLERBACH CORP., Port Townsend, Wash.
ST. REGIS PAPER CO., Tacoma, Wash.
CROWN WILLAMETTE PAPER CO., Camas, Wash.
RAYONIER, INC., Shelton, Wash.
WEYERHAEUSER TIMBER CO., PULP DIV., Everett, Wash.
BRITISH COLUMBIA PULP & PAPER CO., LTD., Woodfibre, B. C.

THE THOMAS PRINCIPLE GUARANTEES PERFECT BALANCE UNDER ALL CONDITIONS OF MISALIGNMENT.
• • •
NO MAINTENANCE PROBLEMS.
• • •
ALL PARTS ARE SOLIDLY BOLTED TOGETHER.
• • •
FOR SPECIAL COUPLING PROBLEMS CONSULT OUR ENGINEERING DEPARTMENT.

PATENTED FLEXIBLE DISC RINGS

BACKLASH, FRICTION WEAR and CROSS-PULL are eliminated.
LUBRICATION IS NOT REQUIRED!

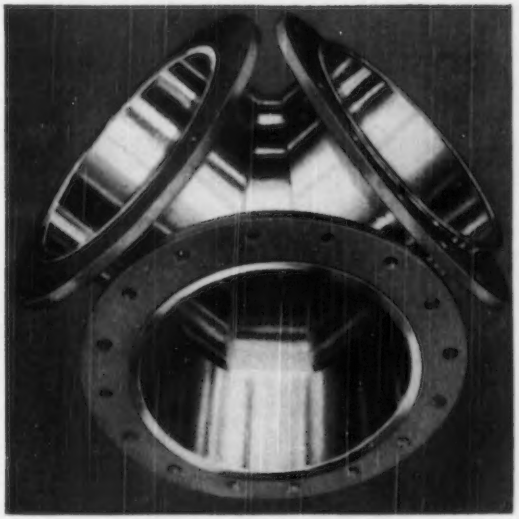
Write for the latest reprint of our Engineering Catalog.

Specialists on Couplings for more than 30 years

THOMAS FLEXIBLE COUPLING COMPANY
Largest Exclusive Coupling Manufacturer in the World
WARREN, PENNSYLVANIA, U.S.A.

Designed for You

. . . if you want stock lines that *last longer, cost less*



A fabricated Monel tee, used as a connection between a cycling chest, dump chest, and pump from the hydrapulper at the Maxwell Paper Company, Franklin, Ohio.

The tee measures 16 in. O.D. and is made of 14-gauge Monel. Fabricated by BROWN-SINGER CO., Middletown, Ohio.

How do *you* figure the cost of a stock line installation?

You know, of course, that adding fabrication costs to installation costs will give you only part of the picture. During the useful life of a stock line, *maintenance costs* may well exceed the sum of the other two figures.

That is why most mills put *low maintenance* high on the list of stock line specifications . . . and why many of the nation's largest mills choose stock lines made of Monel®.

Monel stock lines and fittings bring you a combination of important advantages that you can get from no other stock line material. Check these assets . . . and compare. You'll see at once why Monel has for many years been a *preferred* metal in the paper industry.

Monel, and *only* Monel, offers you all these money-saving and engineering advantages:

1. *Proven high resistance to corrosion by acid and alkaline stocks, and white waters.*
2. *A smooth,* wettable *surface to resist slime and fibre accumulation.*
3. *Strength and hardness equal to those of structural steel. Use lighter gauge metal to do the same job—at less cost!*
4. *Good workability. Monel may be readily machined, formed, bent, soldered, brazed, welded. Welds in Monel are as strong and corrosion-resistant as Monel itself.*
5. *Made in a variety of standard mill forms, including wire, wire cloth, and fastenings.*

In addition to its usefulness in stock lines, Monel has an excellent record in many other important paper-making applications . . . stock inlets, slice blades, head boxes, jordan fillings, doctor blades, screen-plates, winding wire, pump shafts, valves, piping.

Next time you need equipment, think of what *Monel* may mean to you . . . in lower maintenance costs, longer service life, and lighter weight construction. Write for full information and addresses of specializing fabricators and suppliers.

EMBLEM OF SERVICE INCO

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

MONEL . . . FOR MINIMUM MAINTENANCE

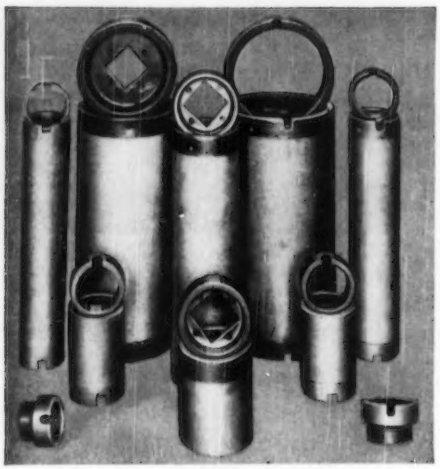
(———), American Importer, London, 56 bls.
G. W. Millar, Birmingham City, Avonmouth, 89 coils.
Bemis Bros. Bag Co., Birmingham City, Newport Mon, 48 coils.
E. J. Keller Co., Inc., Jessie Maersk, Antwerp, 59 coils.
C. Smiles, American Chief, Manchester, 689 bls. (hemp waste cordage).
(———), American Chief, Glasgow, 76 coils.
1st National Bank of Boston, Jessie Maersk, Rotterdam, 21 coils, 13 bls.
National City Bank, Jessie Maersk, Rotterdam, 52 coils (old manila).

Casein

N. Y. Trust Co., Uruguay, Buenos Aires, 2,000 bags.
The Borden Co. Chemical Division, Uruguay, Buenos Aires, 1,500 bags.
Crawford Co., Uruguay, Buenos Aires, 1,000 bags.
E. Lang, Uruguay, Buenos Aires, 500 bags.
Hercules Powder Co., Uruguay, Buenos Aires, 520 bags.
Wilbur Ellis, Uruguay, Buenos Aires, 1,000 bags.
Tupman Thurlow Co., Spenser, Buenos Aires, 100 bags.
East Asiatic Co., Spenser, Buenos Aires, 1,000 bags.
East Asiatic Co., Santa Catalina, La Guaira, 143 bags.

China Clay

English China Clays Sales Corp., Birmingham City, Avonmouth, 1,596 bags.



ELIXMAN CORES CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.

CORINTH, N. Y.

Woodpulp

Price & Pierce, Ltd., Markland, Liverpool, N.S., 957 bls. unbleached sulphite.

Woodpulp Boards

Jay Madden Corp., Vretaholm, Kotka, 545 bls., 54 rolls (solid white).

IMPORTS AT NEWARK

Week Ending Oct. 14

Pagel Horton & Co., Inc., Rosa Thorden, Karskar, 2286 bls. woodpulp.
Newark Star Ledger, Ethel Tombs, Gatineau, 294 rolls newsprint.
Pulp Sales Corp., Vretaholm, Kotka, 3980 bls. unbleached sulphate pulp, 190 bls. bleached sulphite pulp.
Cellulose Sales Co., Vretaholm, Kramfors, 450 bls. sulphite pulp.
Price & Pierce, Ltd., Vretaholm, Wallvik, 1200 bls. dry woodpulp.

IMPORTS AT ALBANY

Week Ending Oct. 14

Pagel Horton & Co. Inc., Rosa Thorden, Ornskoldsvik, 3353 bls. sulphate pulp.
Price & Pierce, Ltd., Rosa Thorden, 3000 bls. dry chemical pulp.
Pagel Horton & Co. Inc., Rosa Thorden, Karskar, 2032 bls. woodpulp.

IMPORTS AT BOSTON

Week Ending Oct. 14

Leigh Textile Co., American Reporter, Bremen, 107 bls. cotton waste.
Pulp Sales Corp., Vretaholm, Kotka, 639 bls. unbleached sulphate pulp.
Jay Madden Corp., Vretaholm, Kotka, 93 rolls solid white woodpulp boards.
C. Gerkin & Sons, Vretaholm, Rauma, 94 bls. insulating boxboard.
Builders Specialties Co., Vretaholm, Rauma, 577 rolls insulating boxboard.
Pulp Sales Corp., Vretaholm, Rauma, 265 bls. unbleached sulphite pulp.
Elof Hansson, Inc., Vretaholm, Vastervik, 1600 bls. woodpulp.
J. A. Conkey, American Miller, Liverpool, 12 cs. gauze carbonizing tissue paper.
Krasner Woolstock Co., American Flyer, Dunkirk, 138 bls. rags.

IMPORTS AT PHILADELPHIA

Week Ending Oct. 14

New England Waste Co., Hoegh Silverbeam, Bombay, 100 bls. old rags.
J. P. Fleissig, Ronda, Havre, 182 bls. paperstock.
Leigh Textile Co., American Chief, Manchester, 46 bls. bagging.
Corn Exchange Bank Trust Co., American Chief, Manchester, 136 bls. paperstock.
E. J. Keller Co. Inc., American Chief, Manchester, 144 bls. paperstock.
Castle & Overton, Inc., American Chief, Manchester, 115 bls. paperstock.
Castle & Overton, Inc., American Chief, Belfast, 28 bls. prints.
Public National Bank Trust Co., Rosa Thorden, Malmo, 16 bls. threadwaste.
(———), Rosa Thorden, Gothenburg, 68 bls. jute threadwaste.
J. P. Fleissig, Jessie Maersk, Rouen, 215 bls. rags.
A. de Vries Trading Corp., Jessie Maersk, Rouen, 29 bls. rags.
Belmont Burlap Bag Co., Jessie Maersk, Rotterdam, 100 bls. bagging.

A. de Vries Trading Corp., Jessie Maersk, Rotterdam, 56 bls. rags.

Castle & Overton, Inc., Jessie Maersk, Antwerp, 50 bals newcuttings.

E. J. Keller Co. Inc., Cape Nome, Rotterdam, 83 bls. rags, 147 bls. old blue cottons, 94 bls. old light prints, 82 bls. cotton rags.

C. Kurz, Cape Nome, Rotterdam, 281 bls. cotton rags.

1st National Bank of Boston, Exilona, Venice, 52 bls. old rags.

J. P. Fleissig, Mormacsurf, Copenhagen, 28 bls. rags.

(———), Mormacsurf, Copenhagen, 4 bls. rags.

IMPORTS AT BALTIMORE

Week Ending Oct. 14

Chase National Bank, Rowa Thorden, Stockholm, 985 crates insulating wallboard.

Pagel Horton & Co. Inc., Rosa Thorden, Ornskoldsvik, 3353 bls. dry bleached sulphate pulp.

Pagel Horton & Co. Inc., Rosa Thorden, Karskar, 508 bls. woodpulp.

S. Shapiro & Son, Cape Nome, Rotterdam, 71 bls. rags.

IMPORTS AT MOBILE

Week Ending Oct. 14

Merchants National Bank, Explorer, Leghorn, 64 bls. rags.

IMPORTS AT NORFOLK

Week Ending Oct. 14

E. J. Keller Co. Inc., American Chief, Glasgow, 56 bls. paperstock.

(———), American Chief, Manchester, 38 bls. paperstock.

D. Benedetto, Jessie Maersk, Antwerp, 274 bls. old bagging.

National City Bank, Cape Nome, Bremen, 106 bls. jute waste.

A. de Vries Trading Corp., Cape Nome, Rotterdam, 126 bls. scrap bagging.

E. J. Keller Co. Inc., Cape Nome, Rotterdam, 147 bls. bagging.

R. J. Reynolds Tobacco Co., Ronda, Havre, 168 cs. cigarette paper.

NEKOOSA INCREASES WAGES

PORT EDWARDS, Wis. — A voluntary five percent wage increase has been granted all hourly paid employes of Nekoosa-Edwards Paper Co. effective October 9.

"Although Nepco entered into contracts with the three unions representing its hourly employes on June 1, 1950, setting forth wages, hours and working conditions with no provisions for reopening the contract before May 31, 1951, economic conditions of the country have changed to a degree unpredictable at the time the contract was signed," John E. Alexander, president and general manager, stated in announcing the voluntary increase to union representatives.

Union representatives unanimously indicated willingness to fulfill present obligations under the existing contract and declared that the voluntary increase as announced by Mr. Alexander was very fair and satisfactory in every respect. The increase covers every hourly paid job classification and raises the minimum male hourly rate to $1.33.

Extra help on toughest Mass Handling jobs. Extra man-hours saved. Extra fast moving, loading, stacking, transporting. Extra profit for you!

It will cost you nothing extra to learn how Towmotor *Mass Handling* makes every materials handling job easier, faster, safer. For complete information, write for your copy of "Handling Materials Illustrated." Towmotor Corporation, Division 17, 1226 E. 152nd St., Cleveland 10, Ohio. Representatives in all Principal Cities in U. S. and Canada.

THE ONE MAN GANG

Arrange now for a private showing of this 30-minute sound movie on Materials Handling. See how Towmotor effects startling reductions in production costs. Ask for complete details at no obligation.

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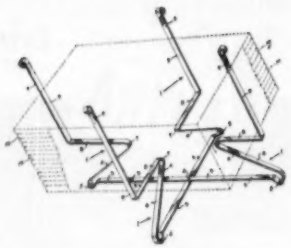
Patent Abstracts

● ***In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.***

United States

U.S. 2,521,110—Glue Applying Apparatus for Paper Cup Making Machines. Paul E. Wixon, Reisterstown, and Clarence E. Chapman, Baltimore, Md., assignors to Joseph Shapiro. Filed July 11, 1949—Issued September 5, 1950.

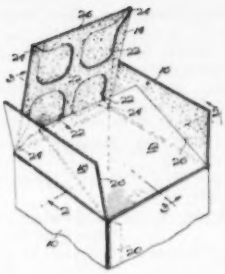


In a paper cup making machine having a glue wheel drive base and means to apply a line of glue to the bottom of a cup body blank; the improvement which comprises a bottom glue wheel applying shaft having a roller carrying arm, a roller on said arm, and means including a glue box wheel drive shaft for rotating said bottom glue wheel applying shaft to apply said roller to the blank, and means for moving said shaft longitudinally back and forth to cause said roller to follow the bottom edge curvature of blanks of different bottom diameters.

U.S. 2,521,126 — Storage Rack for Papers. David D. Price, Oklahoma City, Okla. Filed May 20, 1948—Issued September 5, 1950.

A rack for the purposes described, comprising a pair of crossed pivotally connected members, each of said members including: a substantially flat lower horizontal portion adapted to be pivotally connected intermediate its ends to the similar portion of the other member; a pair of upwardly and inwardly slanting portions each connected to the horizontal portion in spaced apart relation; and an upper horizontal portion extending outwardly from the upper end of each slanting portion.

U.S. 2,521,208—Hermetically Sealed End Closure for Containers. Wilfred A. Eaton, Oakville, Conn., assignor, by mesne assignments, of one-half to Ex-Cell-O Corporation, Detroit, Mich., a corporation of Michigan, and one-half to a group comprising Ace C. Fessenden, Chicago, and Ace Carton Corporation, Chicago, Ill. Filed December 6, 1945—Issued September 5, 1950.



A paperboard container comprising a body portion of substantially rectangular cross section and a flat end closure therefor, said closure comprising a plurality of overlapped flat flaps formed integrally with the body portion and having a relatively thin coating of flowable adhesive therebetween, at least one of said flaps being provided with a pair of separate adhesive receiving pockets having end portions directed toward and including separate corners of one of said flaps, said overlapped flaps being compressed to flatten said pockets and thereby positively flow the adhesive therein outwardly to said corners to seal the openings at said corners and to bond said flaps together.

U.S. 2,521,261 — Papermaking Machine. Drexel V. Smith and George W. Miles, Mobile, Ala. Filed February 21, 1947—Issued September 5, 1950.

In a paper making machine comprising in combination a Fourdrinier belt, an upstanding paper pulp supplying headbox therefor, said headbox including at its upper end a substantially horizon-

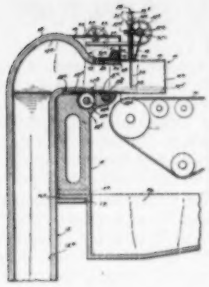
Money-Saving Tip from Kalamazoo

"LINE OLD TANKS WITH KALAMAZOO GLAZED TILE"

It isn't always necessary to replace old concrete tanks that are pitted and letting sand get in your stock. Such tanks make an ideal base for Kalamazoo Glazed Tile. Gives you a "new" tank *at low cost* that will last for years and years without attention. Tile lets you modernize your chests and improve agitation with midfeathers and rounded corners. Write for full particulars—no obligation, of course.

Kalamazoo TANK and SILO COMPANY

225 HARRISON STREET KALAMAZOO, MICHIGAN



tal pulp outlet spout having top, side and bottom walls; a horizontally movable bottom slice projectable beyond the outer end of said bottom wall, a subjacent pedestal supporting said spout, the top of said pedestal and the outer surface of said bottom spout wall providing a horizontal bottom-slice-receiving guide space closed at the sides but opening in the direction of travel of said belt and in a plane above the same, said bottom slice being slidable in the bottom guide space, a housing carried by said outlet spout and substantially coextensive in width therewith a vertically adjustable top slice movable toward and away from said belt, a horizontally adjustable stand therefor carried by said housing, and actuating means for each of said top slice and its stand.

U.S. 2,521,311—Corrosion Inhibiting Compositions. Edward J. Schwoegler and Clemens A. Hutter, Chicago, Ill., assignors to Nox-Rust Chemical Corporation, Chicago, Ill. Filed March 1, 1949—Issued September 5, 1950.

A composition for inhibiting corrosive attack on metal by elements normally existing in the atmosphere consisting essentially of an organic amide and an inorganic metal nitrite present in the ratio of about one part by weight nitrite to 0.05-20 parts by weight of the amide.

Canadian

Can. 467,923 — Polyvinyl Acetate Emulsions. Wilfred Kelso Wilson, Springfield, Massachusetts, U.S.A., assignor to Shawinigan Resins Corporation, Springfield, Massachusetts, U.S.A. Filed April 29, 1947—Issued September 5, 1950.

A process for preparing a stable aqueous emulsion of polyvinyl acetate which comprises polymerizing vinyl acetate while dispersed in an aqueous medium containing for every 100 parts of water, 1-10 parts of gum arabic, 0.01-2.0 parts of a non-polymerizable surface tension depressant characterized by containing an alkali metal sulphonate group and 10-20 carbon atoms and a sufficient amount of water soluble per compound to supply 0.01-0.1 part of available oxygen, the vinyl acetate being introduced at such a rate that not over about 25 parts of monomer for every 100 parts of water are present substantially throughout the polymerization, the weight ratio of water to total vinyl acetate introduced and polymerized is between 100:30 and 100:60, whereby the polymer particles have a diameter of 0.05-0.2 micron.

Can. 467,935—Methods of Producing Lignin Resins. Eduard Farber, Washington, District of Columbia, U.S.A., assignor to Timber Engineering Company, Washington, District of Columbia, U.S.A. Filed July 18, 1945—Issued September 5, 1950.

The process which consists of mixing one part of lignin produced by hydrolysis of woody material and the separation of substantially all of the carbohydrates therefrom, with at least about one partof abietic acid, and, while allowing vapours driven off to escape from the reacting mass, heating the mass to at least about 200°C. until the mass forms a substantially homogeneous melt.

Can. 467,956—Paper Sizing Material. George B. Fowler and Donald K. Pattilloch, Springfield, Massachusetts, U.S.A. Filed July 18, 1942—Issued September 12, 1950.

A precipitable sizing material comprising a mixture of substantial quantities each of starch, rosin and an alkali silicate from the group consisting of metasilicate and sesquisilicate.

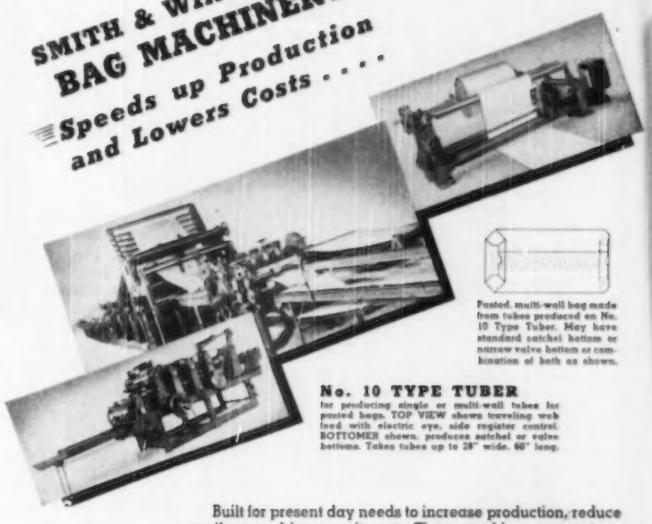
A precipitable sizing material comprising a dry mixture of about 40 parts by weight of air-dry starch, 20 parts by weight of rosin, and 40 parts by weight of sodium metasilicate pentahydrate.

A process of producing a precipitable paper-sizing material which comprises simultaneously saponifying substantial quantities of rosin and gelating substantial quantities of starch in an aqueous medium by means of a sufficient amount of an alkali silicate from the group consisting of metasilicates and sesquisilicates.

A process of producing a precipitable paper-sizing material which comprises suspending substantial quantities of rosin and of starch in an aqueous solution of an alkali silicate from the group consisting of metasilicate and sesquisilicate until the starch has been gelated and the rosin dispersed.

Can. 467,970—Methods of Treating Waste Sulphite Liquor. Thomas Leonidas Dunbar, Watertown, New York, U.S.A. Filed October 18, 1948—Issued September 12, 1950.

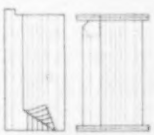
SMITH & WINCHESTER
BAG MACHINERY
Speeds up Production
and Lowers Costs . . . .



Pasted, multi-wall bag made from tubes produced on No. 10 Type Tuber. May have standard satchel bottom or narrow valve bottom or combination of both as shown.

No. 10 TYPE TUBER
for producing single or multi-wall tubes for pasted bags. TOP VIEW shows traveling web feed with electric eye, side register control. BOTTOMER shown, produces satchel or valve bottoms. Takes tubes up to 28" wide, 60" long.

Built for present day needs to increase production, reduce spoilage and lower unit costs. These machines are custom-made to your requirements and will give continuous, trouble-free service. Increase your profits by speeding up production with Smith & Winchester equipment.



Multi-wall, sewed valve type, gussetted tube made on Smith & Winchester Multi-wall Tuber.

S & W MULTI-WALL TUBER

Up to 100,000 valve notch tubes each 8-hour day may be produced on this Multi-wall Tuber for sewed valve bags. One to 6 walls. Machine built in 2 sizes. 20" and 26" face. Up to 6" gussets. Tubes 26" to 50" long. Improved cross pasting units, photo-electric compensating drives and flying splice paper roll stands can be furnished. If you have a bag problem write us.

THE SMITH & WINCHESTER
Manufacturing Company
South Windham, Conn.

SERVING THE PAPER INDUSTRY SINCE 1825

A process of producing cellulosic pulp which comprises digesting cellulosic material with sulphite liquor in a digestion zone, withdrawing spent liquor from the zone after completion of the digestion, treating the spent liquor with an oxidizing agent separating the solid material which is formed from the liquor, treating said liquor with a precipitating agent, separating the clear liquor from the precipitate, and employing the separated liquor for digestion.

A process of producing cellulosic pulp which comprises digesting cellulosic material with sulphite liquor in a digestion zone, withdrawing spent liquor from the zone after completion of the digestion, treating the spent liquor with a bleach liquor and then with sodium chloride, separating the precipitated matter from the solution and employing the separated liquor for digestion.

Can. 468,006—Bag Closing and Sealing Machines. Harold V. Kindseth, Mound, Minnesota, U.S.A., assignor to Bemis Bro. Bag Company, Minneapolis, Minnesota, U.S.A. Filed March 30, 1948—Issued September 12, 1950.

In a bag closing and sealing machine of the type wherein opposite walls of each bag top are folded inwardly over the contents of the bag body, and whereby the remaining walls of the partially closed bag top provide opposed flaps, a paste applying mechanism movably mounted over the path of travel of the bags, said mechanism comprising opposed paste applying surfaces shaped to conform substantially to the contour of the upper faces of said flaps and adapted upon passage of the partially closed bag tops therebeneath, to apply coatings of paste to the entire upper surfaces of said triangular flaps.

Can. 468,031 — Polyvinyl Alcohol-Starch-Clay Adhesives. Richard William Kingerley, Jr., Lakewood, Ohio, U.S.A., assignor, by mesne assignments, to E. I. du Pont de Nemours and Company, Wilmington, Delaware, U.S.A. Filed March 23, 1945—Issued September 12, 1950.

A dry composition comprising a mixture containing, by weight, from 15 to 25 parts of unswollen starch, from 15 to 25 parts of polyvinyl alcohol, and from 50 to 70 parts of kaolinitic monoalkaline clay, the total parts of the named constituents being 100.

A dry composition comprising a mixture containing, by weight, about 20 parts of unswollen starch, 20 parts of polyvinyl alcohol of a type having a viscosity of between 600 and 800 centipoises, measured as an 8 per cent solution at 78°F., and 60 parts of kaolinitic monoalkaline clay, the total parts of the named constituents being 100, and about from 0.01 to 2.0 per cent by weight of preservative, based on the dry weight of the named constituents.

NEW MATERIALS

Zinc Hydrosulphite Powder

Known as $Zn_2S_2O_4$, and described as a low-cost reducing agent in powder form, this product is recommended by the manufacturer as a clay bleach, also for the brightening of groundwood, kraft and certain other paper pulps etc. No special equipment is needed, it is stated; simply add a weighed amount to the beater. As a decolorizer for broke and as a valuable aid in stock de-inking, the product is believed to merit consideration.

Poly-Lok Adhesive

Poly-Lok is a ready-to-use, cold "Resyn" seam adhesive for fabricating multiwall and specialty bags from polyethylene-coated kraft stocks. Combines high solids with low viscosity, and is described as non-flashing, practically odorless, contains no fast-evaporating solvents, is easily cleaned from glue pots with kerosene, toluene or naptha. The announcement claims that the adhesive machines cleanly on direct roller application, tacks immediately, and dries to a transparent, light-gray film unaffected by variations of temperatures or humidity. Tests to withstand hot calcium oxide at 250° F. food locker temperatures down to —20° F.

Smudge-Proof Labeling Tape

The new pressure sensitive tape is designed for use where ordinary labels are impractical or would be obliterated by constant handling. Described as waterproof, acid-resistant, heat-resistant to 150° F., the tape is made of two sheets of acetate tape with a special carbon material sealed between. Identification cannot be erased, smudged or rubbed off, the manufacturer states. Available in ⅝ or ¾ inch widths, with either a blue or black edging, comes packaged in 500-inch roll dispensers.

Concrete Floor Coater

A concrete floor coater which can be applied within four hours upon application of the traffic primer is announced. Floor traffic can be resumed within two hours, the manufacturer states. Described as a tough, quick air dry, clear Vinyl coating, W & W Vinyl Clear Coat is said to be resistant to gasoline, oils, greases, animal fats and many chemicals.

Sodium Dispersions

Sodium dispersions which give rapid, easily-controlled sodium reactions can be made in the user's plant as a result of new techniques. According to the producers, metallic sodium is dispersed in inert media which boil higher than the melting point of sodium and contain up to 50 percent by weight of sodium metal. Reaction rates are said to be accelerated by the fine division of sodium in the dispersions so that reaction temperatures can be lowered with corresponding increases in yield. The concentrated dispersions can be handled in pipes at room temperature, it is stated.

Rewetting Agent

The product, Sterox CD, has been tested and proven on plant scale operations as a rewetting agent, the manufacturer states. Chemically a polyoxyethylene ester, laboratory tests indicate that added in tiny amounts it efficiently restores absorbency to industrial paper toweling. A versatile industrial emulsifier and detergent, the product may increasingly be used to improve moisture pickup of household towels and tissues, it is said.

NEW LITERATURE

Calgon, Inc. Folder, "Calgon Stabilizes Dissolved Iron and Manganese." Describes and pictures "threshold treatment" of *black water* whereby minute amounts of Calgon continuously fed to the water stream prevent precipitation of the iron or manganese which induce fouling and staining.

McGraw-Hill Book Co. Book, "Pulp and Paper Manufacture, Vol. 1, Preparation and Treatment of Wood Pulp." 1043 p., illustrated, price $10. Prepared under the direction of the Joint Executive Committee on Vocational Education representing the Pulp and Paper Industry of the U. S. and Canada, J. Newell Stephenson, Editor-in-Chief. The first of a new series of pulp and paper technology, the study integrates old materials with modern methods and procedures. Unfamiliar processes are explained, typical operating problems are worked out, and sections of the book divided into major mill operations. In preparation are Vol. 2, "Preparation of Stock For Paper Makings," Vol. 3, "Manufacture and Testing of Paper and Board," Vol. 4, "Auxiliary Paper Mill Equipment." Available through *Paper Trade Journal.*

Hungerford & Terry, Inc. Bulletin V-11, "The H & T Poppet Type Multiport Valve." Features zeolite water softeners for sodium and hydrogen cycle ion exchange work.

American Cyanamid Co. Technical Bulletin No. 16-B, "Alwax and Waxine Sizes, Chemical Additives for Better Quality Papers." Tabulates properties imparted to papers, methods of handling, application details, etc.

The American Well Works. Technical Supplement HM, "American Homomix." Gives data on mixing . . . without a mixing tank.

Link-Belt Co. Book No. 2324, 80 pp., "Link-Belt Worm Gear Drives." Contains typical drive problems with their solutions.

Remington Rand, Inc. Booklet SC-679, "Mr. Murphy Has A Vault." Sales copy on recommended construction.

Brookfield Engineering Laboratories, Inc. Brochure, "Brookfield Synchro-Lectric Viscometer." Briefs technical details of new instrument.

Prufcoat Laboratories, Inc. Catalog, "BX White Enamel." Sales copy on a liquid plastic coating rated corrosion-proof.

Eastman Kodak Co. Book, "The Organization of Industrial Scientific Research," by Drs. C. E. Kenneth Mees and John A. Leermakers. An analysis of methods used for the organization and operation of industrial reesarch. Includes design of laboratory and building, financial administration, etc.

N. Y. State College of Forestry. Technical Bulletin 72, 42 pp., illustrated, price $1. "The Manufacture of Chemigroundwood," by C. E. Libby and F. W. O'Neill, N.Y.S. College of Forestry. A comprehensive report on the development of the process.

Superintendent of Documents. Pamphlet, price 15c, "Principles of Plant Protection." Contains suggestions for emergency plant protection and steps to prevent sabotage. Supersedes "Plant Protection For Manufacturers" prepared during World War II.

Leeds & Northrup Co. Catalog EN-S5, "ph Electrodes—Assemblies, Parts and Accessories." Includes hydrogen, quinhydrone, and oxidation-reduction electrodes.

The Cleveland Worm & Gear Co. Bulletin #130, "Cleveland Worm Gear Speed Reducers, Types AT and RT." Includes new horsepower ratings and dimension prints.

Ansul Chemical Co. Booklet, "The Fundamentals of Fire Extinguishment." Illustrated discussion of what fire is, classes of fire and proper methods of extinguishment.

The Pressed Steel Car Co. A Public Relations Handbook, "New 'Unicel' Combination Refrigerator Freight Car"; a new development in American railroading.

Metron Instrument Co. Bulletin No. 100, revised. Describes miniature speed-changers having higher ratios, precision gears and zero backlash.

Spence Engineering Co., Inc. Booklet, 32 pp., "Pressure Regulators, Temperature Regulators and Self-Cleaning Strainers." Catalog and technical copy.

AUSTRALIAN NOTES

Imports of newsprint into Australia during the month of June totaled 10,385 (10,015 tons in reels and 370 tons in sheets). This was a reduction of slightly more than one-third of the May total.

Imports of other printing papers were (figures being hundredweights of 112 pounds): Antique, 62 (U.K.); imitation art, 1,549 (Norway 840, U.K. 655, Sweden 54); machine processed coated, 630 (U.K. 383, Norway 247); other coated papers, 3,220 (U.K. 2,945, Norway 275); monotype, 9 (U.K.); offset embossed except M.G. litho, 225 (Norway 195, U.K. 30); offset except embossed, 2,464 (U.K. 976, Norway 952, Sweden 536); machine glazed litho, 2,009 (Sweden 1,480, Norway 320, U.K. 209); machine glazed except M.G. litho, 1,784 (Sweden 870, Norway 333, Finland 240, U.K. 206, Austria 135); esparto one side supercalendered, 183 (U.K.); one side supercalendered except esparto, 7,898 (Finland 4,949, Sweden 2,250, U.K. 568, Austria 131); two side supercalendered containing 25 percent or less mechanical pulp, 5,811 (Sweden 3,973, U.K. 1,527, Finland 311); machine finished containing 25 percent or less mechanical pulp, 831 (Sweden 405, Finland 290, Norway 136); other printings containing 25 percent or less mechanical pulp, 732 (U.K. 237, Sweden 210, Finland 160, Norway 125); magazine and other printings containing more than 25 percent mechanical pulp, 8,008 (U.K. 6,670, Finland 597, Norway 448, Sweden 293); and glazed imitation parchment, 609 (Sweden 331, Norway 193, Finland 85). There were no importations from the United States.

* * *

It is officially reported that the recent loan of $100 million secured by Australia will be used for aiding a number of industries, including paper making and paper working. No loan money will be available for the purchase of ordinary trade goods either at present prohibited or strictly rationed under dollar conservation controls. However, as most current dollar-earnings are now being used to buy developmental goods, the release of the loan money will ease the pressure on ordinary trade earnings and will probably make it possible for a limited relaxation of import controls on some essential goods.

* * *

Imperial Chemical Industries of Australia and New Zealand, Victoria, is to offer the public 1,006,505 ordinary shares of £1 each at a premium of 2s. 6d. Four percent debentures to the value of £3 million will also be offered. The company plans to spend more than £4 million on expansion of its plants.

* * *

Manufacturers of pulp and paper in Australia are concerned at the effects of the introduction of the 40-hour week, particularly in respect to drop in production. In this regard the results of a recent survey of industrial

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BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER AND PRODUCTION RATIO REPORT

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

	Sept. 9	Sept. 16	Sept. 23	Sept. 30*	Oct. 7
1950	84.5	108.9	106.8	106.2r	106.0
	Sept. 10	Sept. 17	Sept. 24	Oct. 1	Oct. 8
1949	*73.7*	*94.0*	*94.9*	*96.3*	*90.5*

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1949	*94.6*	*92.8*	*89.1*	*85.1*	*82.7*	*78.6*	*72.8*	*87.6*	*89.7*	*96.0*	*98.2*	*89.8*	*88.0*
1950	97.6	101.1‡	102.6‡	100.9‡	101.8‡	103.2‡	90.8‡	195.8‡	102.4‡				

* Weekly capacity base increased by 713 tons.
r Revised.
‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1943	1944	1945	1946	1947	1948	1949	1950
Year to Date	88.3	88.2	88.6	100.7	103.7	97.0	86.5	100.7
Year Average	87.8	88.1	89.4	100.1	104.3	96.2	88.0	

PAPERBOARD OPERATING RATIOS†

	Sept. 9	Sept. 16	Sept. 23	Sept. 30	Oct. 7
1950	81	100	101	103	100
	Sept. 10	Sept. 17	Sept. 24	Oct. 1	Oct. 8
1949	*72*	*92*	*91*	*94*	*92*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1949	*88*	*85*	*79*	*79*	*78*	*75*	*64*	*86*	*82*	*94*	*93*	*83*	*83*
1950	88	92	91	92	91	94	82	100	96				

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.
† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

relations in Australia are of more than passing interest. They show that substantial majorities of employers and employes favor the introduction of incentive payments. Those favoring them believe that better workers should be paid more, that incentives give encouragement to work harder, increase production and create greater harmony. Those in opposition, however, contend that they create jealousy and ill-feeling among workers and penalize the old and the slow. But 90 percent of the workers interviewed admit that Australian employers give employes a fair deal. The main cause of industrial unrest is given as disruptive union tactics through Communist influence and agitation. As a body employers oppose the nationalization of industry, and workers favoring it do so only in the case of electricity, gas and coal.

* * *

The Tasmanian Board Mills Ltd. and subsidiaries reports a profit of £50,051 for the year to June 30, 1950, compared with the £35,572 of the previous 12 months. Ordinary dividend is increased from 4 to 5 percent.

* * *

The Whatakane Board Mills Ltd. reports a net profit of £75,653 for the year, compared with the £57,741 of the previous year. Sales were a record at £978,127, and during the year the company delivered 15,091 tons of cardboard. Ordinary dividend will be at the rate of 5 percent.

* * *

Associated Pulp and Paper Mills Ltd. reports a record consolidated profit of £243,685 for the year, compared with the £94,537 of the previous year. Ordinary dividend is steady at 6 percent.

* * *

R. H. Smythe, secretary of New Zealand Forest Products Ltd., was recently presented with a silver tray by his directors as a token of recognition of his quarter-century of service. The presentation was made by Sir Charles Marr, of Sydney, the director who had been longest associated with Mr. Smythe.

New Zealand Forest Products announce the appointment of several key personnel to operate their £3 million pulp and paper project at Kinleith. J. T. Christiansen will be mills superintendent. He joined the company in 1948, on the recommendation of Karlstadt Mekanista Verkstad, of Sweden, to supervise the construction of their kraft pulp mill. He is a member of American, Australian and Finnish associations of pulp and paper engineers.

A. R. Barlow will be resident engineer. He is now on his way from England where he was, until his recent resignation, technical assistant to the chief engineer of the Bowater group.

J. B. Wallace, M.B.E., B.E., A.M.I.C.E., will be the civil engineer. He has been with the Auckland City Council as acting-designing engineer.

D. L. Stacey will be manager of the pulp mill. He was manager of the hardboard and insulating board division of the firm until, in 1948, he went to Canada and the United States for experience in the pulp and paper field.

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Complete Service for Design, Construction, Equipment Installation, Engineering Reports and Surveys

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District Offices
19 Rector St., New York; M & M Bldg., Houston; 120 S. La Salle St., Chicago; 2975 San Fernando Road, Los Angeles; 21 E. 12th St., Cincinnati

OBITUARIES

Stephen O. Heiser, superintendent of Smeallie & Voorhees, Inc., died September 30 in Amsterdam, N. Y. Mr. Heiser had been associated with the company for 33 years and was superintendent for 23.

Alvah L. Miller, 56, for fifteen years president of H. G. Craig & Co., of 230 Park Avenue, newsprint wholesalers and mill agents, died October 13. He lived at Tarrytown, N. Y. Mr. Miller was graduated from the Colorado School of Mines with a degree in mining engineering. But he turned his engineering skills instead to the construction of paper mills. Before he succeeded his father, the late Alvah Miller, as president of H. G. Craig, he was with the Crown-Zellerbach and the St. Regis Paper Co.

Edward Morgan Mills, 75, principal founder and until 1943 president and director of Rayonier, Inc., died October 10. Until recently he was a director of the Crown-Zellerbach Corp. On the staff of the bond firm of Peabody-Houghtelling Co., he became impressed with the possibilities of paper and pulp manufacture, and in 1919 went to Seattle. There he joined the Zellerbach interests in San Francisco in establishing the Washington Pulp and Paper Co., which in 1920 built a paper mill at Port Angeles which was later taken over by Crown-Zellerbach.

WITH OUR SALES FORCE COVERING FIVE STATES we are in a position to do an excellent job for any mill interested in carload tonnage.

Excellent established contacts in Southern New Jersey, Eastern Pennsylvania, Maryland, District of Columbia and Virginia assure you of an outlet for contract tonnage to converters.

Full investigation of our organization is invited. Write or wire Box No. 50-496, care Paper Trade Journal. N-2

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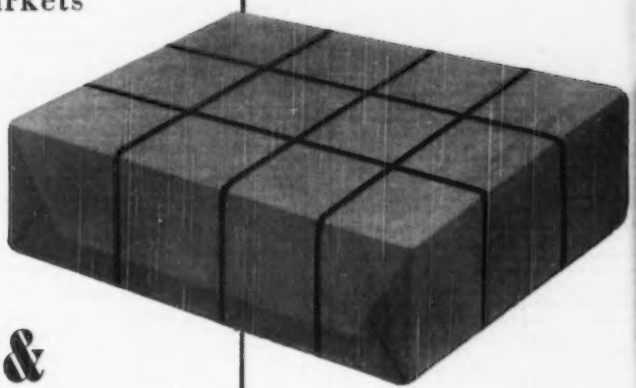
exporters of wood pulp
to all world markets



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10 East 40th Street, New York 16, N.Y.

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HELP WANTED

MEN WANTED
POSITIONS OPEN

We can place—general superintendent Cylinder board and Fourdrinier corrugated mill; superintendent Cylinder machine specialty paper mill; managers and superintendents for roofing felt and asbestos cement mills.

Cylinder and Fourdrinier machine foremen also machine tenders and back tenders; coating foreman for board; boss pipe fitter newsprint mill; cost accountant; chemists, chemical engineers and laboratory men; master mechanics and plant engineers; draftsmen and head draftsmen; beater engineers; newsprint mill salesman for New York City office; cost accountant and time study man.

We invite correspondence (confidential) with executives seeking positions and with employers seeking new personnel.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington Street, Boston, Mass.
O-19

WANTED

Experienced Laboratory Technician for 2 machine Mid-Western Mill on Book and Offset grades. Men will be required to work swing shifts in maintaining quality controls of beaters, finished paper, and de-inking plant. Men with leadership ability will have opportunity to advance to Supervisory positions. All replies will be held in strict confidence.

Address Box 50-498, care Paper Trade Journal.
N-2

"*CONVERTING FOREMAN* EXPERIENCED IN CONVERSION OF TOILET TISSUE, TOWELS, NAPKINS, SHEETING, CUTTING LIGHTWEIGHTS. FULL RESUME PLEASE TO BOX NO. 50-486, CARE PAPER TRADE JOURNAL.
O-26

Excellent opening for young man 30 to 40 as Sales Engineer with Pulp and Paper machinery manufacturer. Must be technical graduate with general knowledge of pulp and paper industry and preferably with some sales experience. State age, education, experience, etc. in letter to Box 50-485 care of Paper Trade Journal.
O-19

WANTED BY PAPER MILL in Mid-West: Back Tenders or experienced third hands willing to learn Back-Tender's job. Also Machine Tenders, or Back Tenders willing to learn Machine Tender's job. Address Box 50-465 care Paper Trade Journal. O-19

WANTED — SALES ENGINEER — Experienced in Pulp and Paper Mills, for sales and service work. Excellent opportunity with old established machinery manufacturer. In reply, give resume of education, experience and current salary. Address Box 50-512 care Paper Trade Journal. TF

HELP WANTED

ELECTRICAL DRAFTSMAN

Four machine Wisconsin paper mill has opening for ambitious young Electrical Engineer. Should have paper mill or similar background and knowledge of N.E.C. and be familiar with plant electrical requirements, power and control equipment and wiring, both A.C. and D.C. Industrial electronic experience helpful. Salary based on individual ability with excellent opportunity for advancement. Replies confidential. Write Box 50-484, care Paper Trade Journal.
O-26

TECHNICAL SALESMAN
PAPER CONVERTING MACHINERY

Experienced man wanted for responsible sales engineering position for special paper converting machinery. Principal equipment being winders, coating machinery, embossers, laminators etc. All replies strictly confidential. Location in upstate New York.

Box No. 50-469 care Paper Trade Journal. O-19

PRODUCTION CHIEF

Paper converting, nationally known. Printing, coating, gumming, laminating, finishing operations. Lifetime position for top-flight production executive. Our people know of this ad. Send full details confidentially to President, Box 50-443, care Paper Trade Journal. TF

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.
TF

MASTER MECHANIC

For converting mill near Madison, Wisconsin. All around practical man wanted with plenty of experience and know-how. Replies confidential. Our employees know of this ad. Write Box 50-481, care Paper Trade Journal. O-26

WANTED—Experienced Pulp and Paper Mill Engineer, location Northeast. Address Box 50-488 care Paper Trade Journal. O-19

HELP WANTED

MILLWRIGHT SUPERVISOR

Fox River Valley, Wisconsin, paper mill has opening for ambitious young man with technical training and practical experience in millwright work. Will be understudy to boss millwright who has crew of 40 to 50 men. Plenty of opportunity for advancement. Replies confidential. Write Box 50-474 care Paper Trade Journal. O-26

WORKING SUPERINTENDENT for small, fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 50-378 care Paper Trade Journal. TF

TOUR BOSS wanted for Board Mill in East. Must have experience on folding grades. Address Box 50-473 care Paper Trade Journal. TF

WANTED—NIGHT BOSS for a one machine board mill. Must be experienced in the manufacture of jute liner and container chip. Mill located in the Middle West. Excellent salary and many employee benefits. Address Box 50-482 care Paper Trade Journal. O-26

TOUR BOSS—Experienced cylinder machine tender qualified to handle position. Rotating shifts. Mill located in Massachusetts. In reply give all details. Address Box 50-497 care Paper Trade Journal. N-2

MACHINE TENDER—Tissue experienced on Fourdrinier pick up. Steady, excellent pay and working conditions. Southeast. Address Box 50-508 care Paper Trade Journal. O-19

WANTED—Machine Tenders, Back Tenders and Tour Bosses, for cylinder board machine, making test liner and folding boxboards. Plant located in middle west. In reply give full details, including experience, references, salary. Address Box 50-502 care Paper Trade Journal. O-26

SITUATIONS WANTED

GENERAL MANAGER or SUPERINTENDENT—25 years experience making book, bond, vellum, offset, ledger, envelope, map, coil wrap, carbonizing, interleafing and others too numerous to mention. Am cost minded, very good labor relations. Can guarantee quality and production. Now running four machines specialty mill, but desire change. Best of references. Address Box 50-478 care Paper Trade Journal. O-19

SUPERINTENDENT 25 YEARS OF PRACTICAL EXPERIENCE

on Cylinders and Fourdriniers manufacturing the following grades: book, writing, bond, ledgers, offset, coating, kraft of all kinds, manilas, drinking cup, index, bristol, envelope, tag board, folding box board, tabulating and surface sizing. Can get quality and production. Best of references.

Box 50-462, care The Paper Trade Journal.
O-19

RATES FOR CLASSIFIED ADVERTISING

HELP WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

SITUATIONS WANTED—10c a word, double rate for heavy face type. Minimum charge $2.50. If repeated ½ rate will be charged for each consecutive repetition.

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Address replies to advertisements appearing under Box Numbers in care of PAPER TRADE JOURNAL, 15 West 47th Street, New York 18, N. Y.

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EXPERIENCED
KRAFT PULP AND PAPER MILL ENGINEER AND OPERATOR

wants to contact mills.

Cement Sacks, Gumming, Envelopes and other Specialties.

Address Box 50-439 care Paper Trade Journal. N-2

EXECUTIVE ACCOUNTANT

Capable organizational and supervisory ability. 20 years administrative experience in folding carton, paperboard and printing industry. Available immediately. Box 50-440 care Paper Trade Journal. O-19

AVAILABLE—Exceptionally versatile young executive. Many years experience all phases of manufacturing specialty bags, envelopes—cellophane, glassine, kraft, combination and non-transparent papers; also latest films like Polyethylene. Administration—production—promotion—sales management. Address Box 50-477 care Paper Trade Journal. O-19

SITUATIONS WANTED

BAG SPECIALTIES—Satchel-bottom, roll-cut envelope style, flat & square bags fabricated from cellulose film and pliofilm. Heavy duty flat & square, sacks and multi-wall. Anilox, aniline, letter-press and gravure printing. Excellent record of waste reduction, increased quality and production. Engineering background engendering design of many special converting units and improvements. Personnel training. Capable assume complete plant operation responsibility. Address Box 50-495 care Paper Trade Journal. O-19

MANAGEMENT EXECUTIVE, early forties, established record paper converting and printing. Seeking New England location. Chiefly interested in organizational problems with emphasis on production, industrial relations, operating management. Salary five figures. Address Box 50-479 care Paper Trade Journal. O-19

SALESMAN—Contacting paper mills interested in continuing midwestern associations. Sound sales and development, administration and technical background. Management and potential. Age 30. Address Box 50-510 care Paper Trade Journal. O-19

COLLEGE GRADUATE (E.E.) with public liability safety experience with insurance company, wants to make paper manufacturing his life work. Willing to begin at bottom with maintenance crew. Address Box 50-503 care Paper Trade Journal. O-26

FOR SALE

Of Interest to Paper Mills

We own and offer:

68" Oswego hand clamp mill-type Power Cutter, with power back-gauge.
38" Acme late model & 40" C — P Power Cutters.
65" Hamblet Sheeter with layboy.
100" Horne Sheeter with back-stand.
58" Finley Sheeter.
48" Kidder model CH Slitter.
32" Cameron model 24-3A Slitter.
36 x 48 Kidder one-color Rotary Wrapping Paper Press.
12 x 26 Kidder Bed & Platen Press.
No. 1½ Cottrell 3-color Bag Press.
Balers—both new and used.
Large Quantity Newspaper & Stereo Equipment.

THOMAS W. HALL COMPANY, INC.
120 West 42nd St., New York 18
(Plant at Stamford, Conn.)
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PAPER COATING MACHINERY MANUFACTURERS—Waxing, Oiling, Carbon, Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester, 11, N. Y. TF

FOR SALE

1—112" Cameron, Type 18, 60" rewind.
1—3' Shartle Hydrapulper, with motor.

BALER
1—Wire Baler.

BEATERS
1—1½ lb. Laboratory Beater.
1—500 lb. Beater—iron tub.
1—Dilts Iron Tub Laboratory Beater. Beater roll 14" diameter x 10½" face, including motor.

CALENDER STACKS
1—72" 5 roll Calender Stack.
1—2 roll pressure calender—32" x 108".
1—72" 4 roll calender stack. (Extra heavy duty).

CHIPPER
1—96" Murray, 4 knife Chipper—anti-friction bearings.

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.
1—Jeffrey Hammermill.

CYLINDER MOLDS
1—80" diameter x 72" face.
1—86" diameter x 79" face.
1—48" diameter x 84" face.
2—36" diameter x 54" face.
1—48" diameter x 117" face.

DECKERS
3—IMPCO 74" face x 30" diameter cylinder mold.

DIGESTERS
2—14 ft. Rotary Digesters.

DRIVES
1—#6½ Reeves Drive.
1—#4 Reeves Drive
1—#3 Reeves Drive.
1—#5 Reeves drive.
1—Reliance Electric Drive, complete with 5 gear head motors.
2—#3 Reeves Drives (totally enclosed).

V-BELT DRIVE
1—31¼" diameter x 7½" face, 5 groove.
1—19½" diameter x 7½" face, 5 groove. (With clutch)

DRYERS
1—Complete unit, consisting of 6 dryers, 36" diameter x 38" face, including frames, gears, anti-friction bearings.
2—42" diameter x 74" face.
7—24" diameter x 48" face.
4—36" diameter x 72½" face, with gears and bearings.
1—48" diameter x 91" face.
1—36" x 143".
1—24" x 130".
3—36" diameter x 96½" face.
1—48" diameter x 70" face.
2—48" diameter x 92" face.
1—48" diameter x 82" face.
23—36" diameter x 70" face—complete with bearings, gears & frames.

EMBOSSER
1—84" Hudson Sharp Toilet Embosser. Spare engraved roll.

FELT CONDITIONER
1—140" Nash Felt Conditioner.

FLAT SCREENS
1—6 plate Shartle Flat Screen.

FRAMES
Vertical frames for 100 dryers, 48" diameter, with bearings.

JORDANS
2—Noble & Wood Mammoth Junior.
1—Emerson Jordan—25 to 30 tons capacity—iron plug including new spare iron plug.

LABORATORY EQUIPMENT
1—3' Shartle Hydrapulper, with motor.

LIME SLUDGE FILTERS
2—IMPCO Lime Sludge Filters, vacuum type, 5' diameter x 4' face.

MISCELLANEOUS
1—Caustic Mixer.

MOTORS
1—125 h.p., 1700 r.p.m.
1—50 h.p., 850 r.p.m.
Write us regarding your requirements.

PRESSES
3—Sets Primary Presses, complete, 145" face. Anti-friction bearings. Also all types of rolls for 145" wet end.

PULLEYS
Various cone and assorted pulleys.

PULP BALER
1—200 ton hydraulic Pulp Baler. (Practically new).

PULPERS
1—Jones Pulper. Complet. with motor and drive.
1—Noble & Wood Pulper—Iron Tub.

PULP PRESSES
2—Pulp Presses 76" wide (Kamyr Type).

PUMPS
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

REEL
1—104" Beloit two bowl reel.

ROLLS
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS
1—#2 Bird Rotary Screen.
1—#2A Bird Rotary Screen.
3—#2A Cylinders, only (for Bird Rotary Screens). (Chrome plates).

SAVEALLS
1—#4 Bird Saveall, complete with gear head motor.

SHEETERS
1—136" Moore & White Sheeter, duplex with layboy.
2—36" Sheeters.
2—46" Sheeters.
2—50" Sheeters.
1—44" Hamblet Sheeter, rebuilt.

SLITTERS & WINDERS
1—84" Cameron—Type 8-10.
1—42" Cameron—Type 40-4-R
3—42" Cameron—Type 24-2-A.
1—42" Cameron—Type 9-5
1—118" 2 drum Waldron.
2—112" Cameron—Type 18.
1—62" Cameron—Type 6.
1—72" Beloit two drum winder, rebuilt, ball bearing.
1—104" Beloit two drum winder.

STOCK PUMPS
1—10 x 20 Shartle Duplex.
1—7 x 16 Shartle Duplex.
4—7 x 16 Shartle Triplex.
1—10 x 20 Shartle Triplex.
2—8 x 18 Shartle Duplex.
Advise as to your requirements.

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5—Suction Boxes, 82" drilled face x 6" wide.

SUCTION COUCH ROLL
1—Sandusky 14.5" dia. x 103" drilled face.

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1—#21 Nash Hytor.
1—L-5 and 1—L-6 Nash Vacuum Pumps.

VAT
1—Iron end Vat only, for decker or saveall, suitable for cylinder mold 36 x 130.

WASHERS
1—3 cylinder Washer 30" diameter x 74" face cylinder mould.

WAXING MACHINES
1—72" Mayer Waxer.
1—80" Potdevin Waxing Machine.

WET MACHINE
1—72" Rogers Wet Machine, cylinder mold 68x72, with spare cylinder mold.

YANKEE DRYERS
3—Yankee Dryers 84" diameter x 52, 53 and 62" face.

We are always in the market to purchase your surplus or idle machinery. What have you to offer? Wanted Cylinder and Fourdrinier Machines (complete mills).

Paddy Ross, Pres. **J. J. ROSS COMPANY** **Ben Kurs, Treas.**
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FOR SALE

FOR SALE

1—Fourdrinier machine. Wire 110" x 60' 22" suction couch, two main presses, 29 dryers 48x109, one calender stack, one two-spool reel. Bevel mortise gear drives.

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PMC DIE CUTTER

Unused. Perfect condition. (Size "width with slitter attachment.")

JOHN W. CRAWFORD COMPANY
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New York 13, New York
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FOR SALE

1—8 ft. x 8 ft. Oliver filter, stainless steel equipped.
1—Practically new Woods thickener.
1—Mammoth 6r. Jordan, equipped for motor drive with ⅛" plug and 3/16" shell filling, very good.
1—52" pasting unit with chilled rolls 12 x 52".
1—48" seven roll supercalender.

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36" BECK SHEETER—$2000.00.

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Tel. EVergreen 6-0505
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FOR SALE—2 used 46-inch Waldron 6-brush coating units with complete festoon drying system and reelers. Good condition. Price reasonable. Address Box 50-253 care Paper Trade Journal. TF

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FOR SALE—114" Moore & White KT Rotary Sheeter. Single knife, 3 pair slitters, 10 H.P. AC Motor and controls. Immediate possession. Fitzpatrick Container Company, Shurs Lane and Pechin Street, Philadelphia, 28, Pa. N-9

WANTED

WANTED

One 50" width heavy duty winder with slitter attachment capable of cutting at least four widths. Must make rolls up to 50" dia.

STOCKPORT PAPER CORPORATION
Stockport, New York
Telephone Hudson 8-6545
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WANTED

Serviceable Grocery Bag Machine
8 through 20 lb. sizes.
Recent Model Potdevin preferred.

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SLITTER 60 to 70 Inch—Shear Cut preferred.
SHEETER 64 to 72 Inch.
PAPER CUTTER 42 to 50 Inch.
ANILINE PRINTER 30 to 36 Inch wide—three colour with Bronzing Unit.
Advise full particulars to Anglo-African Shipping Co., Inc. 248 Fifth Avenue, NEW YORK 16.
PHONE-Murray Hill 6-2420. TF

WANTED

Fourdrinier machine to trim 76" or wider.

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WANTED—Single Cylinder Paper Machine about 72" trim. Also interested in stock preparation equipment. Address Box 50-467 care Paper Trade Journal. O-19

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 50-18 care Paper Trade Journal. TF

WANTED—#2 and #3 Miami Motor Driven Jordans for 440 volts. Address Box 50-466 care Paper Trade Journal. O-19

WANTED—Double cut-off heavy duty mill sheeter 60" wide. Address Box 50-468 care Paper Trade Journal. O-19

WANTED

WANTED—Brightwood Box Machine, Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 50-193 care Paper Trade Journal. TF

WANTED—1—42" Type 9 Cameron Winder; 1—Tissue Sheeter, size 36"-50". Give complete information to Box 50-464 care Paper Trade Journal. O-19

WANTED—Used and in good condition Hobbs or Seybold die press approximately 28" x 42". Advise model, size, condition and price. Address Box 50-499 care Paper Trade Journal. N-9

WANTED—One 300 H.P. Synchronous Motor, .8% Power Factor, 450 R.P.M., 440 volt, 3 phase, 60 cycles. Reply to Sangamon Paper Mills, 137 W Pershing Road, Chicago, Illinois. O-26

WANTED—Fourdrinier Mill, one or two machines. Prefer mill in East. Will consider any location. Address Box 50-504 care Paper Trade Journal. O-26

WANTED—Flat Cutter Seybold or similar approximately 36". Address Box 50-505 care Paper Trade Journal. O-19

WANTED—Rogers Wet Machine 20 to 50 tons 24 hours. Advise age, condition, all details. Address Box 50-506 care Paper Trade Journal. O-19

WANTED—2 Rubber Covered Couch Rolls approximately 90" face, 20" diameter. Details to Box 50-507 care Paper Trade Journal. O-19

WANTED — INTERNATIONAL OPEN END MACHINE. Give full details as to range, type motor and price. Where it can be seen in operation. Address Box 50-511 care Paper Trade Journal. O-26

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Phone: Evergreen 6-0505
O-26

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FOR LEASE—Willing to lease paper mill to responsible party. Address Box 50-491 care Paper Trade Journal. O-19

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STAINLESS STEEL CASTINGS
for all equipment exposed to corrosion by sulphite acids or other corrosive agents
MICHIGAN STEEL CASTING CO., DETROIT 7, MICH.

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Also PRESSED FELTS for M. G. Dryers.

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PARIS BLACKS

Carbon blacks for all paper and board stocks—outstanding soft texture, particle fineness and jet black color. Takes well to the fiber, shows high retention.

Best for performance in the Beater and Jordan because of ease of wetting and ready dispersion in the furnish.

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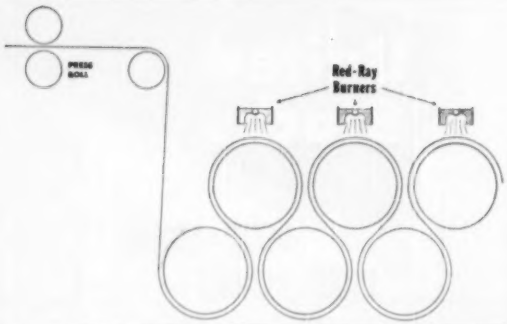

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Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

BARS
Dilts Machine Works
E. D. Jones & Sons Co.
The Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BASIC WEIGHT SCALES
Thwing-Albert Instrument Co.

BEARINGS
Black Clawson Company
E. D. Jones & Sons Co.
Link Belt Company
Magnus Metal Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Timken Roller Bearing Co.
Valley Iron Works Co.

BEATERS AND JORDANS
American Paper Machy. & Engrg. Works, Inc.
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Morden Machines Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld Div., Lukens Steel Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BELTING
Alexander Brothers
Allis-Chalmers Mfg. Co.
The Goodyear Tire & Rubber Company
Link Belt Company

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General Dyestuff Corp.
Rohm & Haas Co.
Virginia Smelting Co.

BLEACHING APPARATUS
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Carthage Machine Co.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

BOILERS
Babcock & Wilcox Co.

BOTTOMS
Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

BOXBOARD SCALES
Thwing-Albert Instrument Co.

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BRUSHES
M. W. Jenkins Sons, Inc.
Gus Reidel & Son

BURSTING TESTERS
B. F. Perkins & Son Inc.
Testing Machines, Inc.

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Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Co.
Edward J. McBride
The Moore & White Co.
Perkins & Sons, Inc., B. F.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

CARRIER ROPE
Williams-Gray Co.

CASEIN
American Cyanamid Co., Industrial Chem. Div.
Bunge Pulp & Paper Co.
Hercules Powder Co.

CASTINGS
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Babcock & Wilcox Co.
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Hamblett Machine Co.
Hardinge Company, Inc.
Lobdell Co.
Magnus Metal Corp.
Michigan Steel Casting Co.
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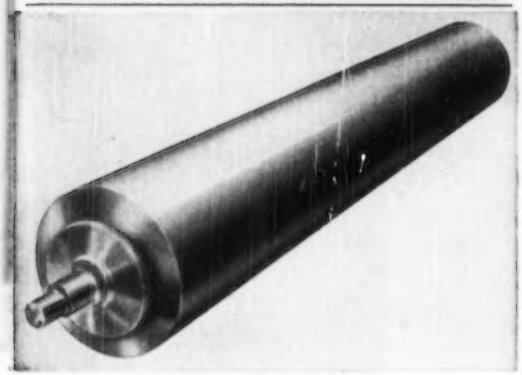

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Ross, J. O., Engrg. Co.
Shartle Brothers Machine Co.

CHAINS
Link Belt Company

CHEMICAL COTTON PULP
Hercules Powder Co.

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Calgon, Inc.
Cowles Chemical Company
Diamond Alkali Co.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
B. F. Goodrich Chemical Co.
Gotteman & Co.
Hercules Powder Co.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Niagara Alkali Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Rohm & Haas Co.
Solvay Sales Corp.
Virginia Smelting Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

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Kalamazoo Tank & Silo Co.
Shartle Bros. Mch. Co.

CHUCKS
Efficiency Engrg. Co.

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Cowles Chemical Company
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co.
Solvay Sales Corp.
Wyandotte Chemicals Corp., J. B. Ford Division

CLUTCHES
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Hardinge Company, Inc.
Hudson Sharp Machine Co.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.

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Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Hudson Sharp Machine Co.
The Mayer Machine Co., Inc.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

COATING MATERIALS
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American Cyanamid Company Industrial Chemicals Division
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B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
National Wax Co.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

COGS
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COMPLETE FOURDRINIER ROLL GRINDING
Manchester Machine Co.

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Nash Engineering Co.
Roots-Connersville Blower Corp.

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Hungerford & Terry, Inc.
The Permutit Company

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Vapo Systems Co.

CONSISTENCY REGULATORS
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Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

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C. M. Guest & Sons

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Black Clawson Company
Dilts Machine Works
Fbasco Services
Frank W. Egan & Co.
Gibbs, Ralph
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
Roderick O'Donoghue
The Rust Engrg. Co.
Shartle Bros. Mch. Co.
J. E. Sirrine & Co.
John Waldron Corp.
H. G. Weber & Co., Inc.

CONTINUOUS DIGESTER
Paper & Industrial Appliances

CONTROLLERS
Askania Regulator Company
Black Clawson Company
The Brown Instrument Co.

CONTROLS
Askania Regulator Co.
The Bristol Company
The Brown Instrument Co.
Johnson Corp.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

CONVERTING MACHINERY
John Waldron Corp.
Dilts Machine Works
Hudson-Sharp Machine Co.

CONVEYORS
Black Clawson Company
Industrial Brownhoist Corp.
Link Belt Company
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.

CORES
Eltxman Paper Co.
Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.

CORROSION RESISTANT
Amercoat Corporation

COTTON LINTER
Railway Supply & Mfg. Co.

COUPLINGS
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Farrel Birmingham Co., Inc.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Thomas Flexible Coupling Co.
Valley Iron Works
Waldron Corp., John

CRANES
Cleveland Crane & Engrg. Co.
Industrial Brownhoist Corp.
Link Belt Company
Whiting Corp.

CURL TESTER
Thwing-Albert Instrument Co.

CUTTERS
Black Clawson Company
Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Harris-Seybold Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
The Sandy Hill Iron & Brass Works
The Smith & Winchester Mfg Co.
Taylor, Stiles & Co.

CYLINDER MOULDS
Manchester Machine Co.

CYLINDERS
M. W. Jenkins Sons, Inc.
National Tube Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DECKLE WEBBING
Wilhams-Gray Co.

DEFIBRATORS
American Defibrator Co.

DE-INKING
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General Dyestuff Corp.
Kinsley Chemical Co.
Roderick O'Donoghue
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DEINKING CHEMICALS
E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Kinsley Chemical Co.
Monsanto Chemical Company
Nopco Chemical Co.

DE-MINERALIZING EQUIPMENT
Hungerford & Terry, Inc.
The Permutit Company

DEMULSIFIERS
Wyandotte Chemicals Corp., Michigan Alkali Div.

DENSOMETERS
Bunge Pulp & Paper Co.
W. & L. E. Gurley

DESIGN CONSTRUCTION
Ebasco Services

DETERGENTS
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Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DEWAXING CHEMICALS
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

DIFFERENTIAL SCALES
Thwing-Albert Instrument Co.

DIGESTERS
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Lukenweld
Pusey & Jones Corp.

DIGESTERS (Continuous)
Paper & Industrial Appliances

DIRTEC
Bird Machine Co.

DISPERSING AGENTS
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DOCTORS
Bird Machine Company
Black Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Bird Machine Company
Lodding Engrg. Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DRIERS
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Hardinge Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
T. J. Ross Company
Red-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRILLED SUCTION COUCH ROLLS
Manchester Machine Co.

DRILLED SUCTION DRUM ROLLS
Manchester Machine Co.

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
T. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

DRUM WINDERS
Manchester Machine Co.

DRYER DRAINAGE
Stickle Steam Specialties Co.

DRYER ROLL PYROMETER
Thwing-Albert Instrument Co

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

DYESTUFFS
American Cyanamid Company Calco Chemical Div.
Bunge Pulp & Paper Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.

ELECTRIC HYGROMETER
Thwing-Albert Instrument Co.

EMBOSSING MACHINES
Dilts Machine Works
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Northern Engraving & Mch. Co.
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Roll Co.

EMULSIFIERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.
Wallerstein Co., Inc.

EVAPORATORS
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Goslin-Birmingham Mfg. Co. Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div of Whiting Corp.

EXPANDERS
Mount Hope Machinery Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
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Leeds & Northrup
Merrick Scale Mfg. Co.
The Permutit Company

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Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
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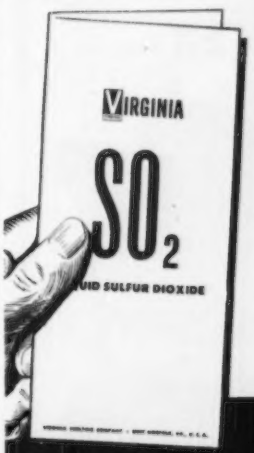

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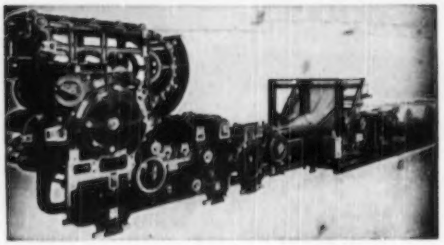

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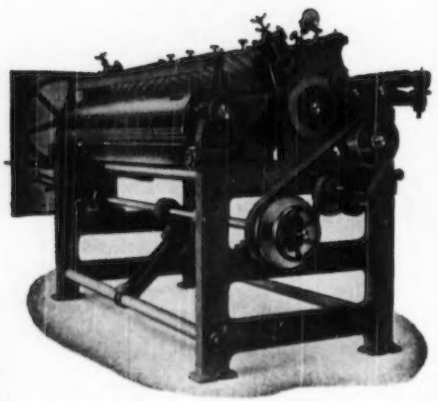

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Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

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Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

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Green Bay Fdy. & Mch. Co.
Hardinge Company, Inc.
J. M. Huber Corp.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

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Shartle Bros. Mch. Co.
Walworth Company

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Norton Co.

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The Sandy Hill Iron & Brass Works

FORK LIFT TRUCKS
Towmotor Corp.

FORMATION
Thwing-Albert Instrument Co.

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The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

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Farrel-Birmingham Co.
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Moore & White Co.
D. J. Murray Mfg. Co.
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Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

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Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company

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Mount Hope Machinery Co.
Bound Brook Engrg. Co.
John Waldron Corp.

GUMMING MACHINES
Dilts Machine Works
The Sandy Hill Iron & Brass Works

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Stein-Hall Co., Inc.

HEADS
Babcock & Wilcox Co.
Lukens Steel Company

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Stickle Steam Specialties Co.
Westinghouse Electric Corp.

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Davis Engrg. Corp.
E. D. Jones & Sons Co.
General Electric Co.
Leeds & Northrup
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

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Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

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B. F. Goodrich Chemical Co.

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Dilts Machine Works

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INKOMETER
Thwing-Albert Instrument Co.

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N. P. Bowsher
General Electric Company
W. & L. E. Gurley
National Technical Laboratories
B. F. Perkins & Son
Photovolt Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co.

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Shartle Bros. Mch. Co.

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Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

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Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KNOT BORING MACHINES
DeZurik Shower Company

KRAFT WRAPPING PAPERS
Canadian Newsprint Supply Co.

LABORATORY CORRUGATOR
Thwing-Albert Instrument Co.

LABORATORY EQUIPMENT
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Bauer Brothers Co.
Beckman Instruments, Inc.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories

Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.

LAMINATING COMPOUND
National Wax Company

LAMINATING MACHINES
Dilts Machine Works
John Waldron Corp.

LAY BOYS
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Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

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Railway Supply & Mfg. Co.

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Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

MAGAZINE REELS
Dilts Machine Works (Kohler Systems)

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Dilts Machine Works
Industrial Brownhoist
Shartle Bros. Mch. Co.
The Wellman Engrg. Co.

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Lobdell Co.
Testing Machines, Inc.

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Moore & Munger
National Wax Company

MOISTURE CONTENT CONTROL
Stickle Steam Specialties Co.

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Fairbanks, Morse & Co.
General Electric Company
Reliance Electric & Engrg. Co.

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Bunge Pulp & Paper Co.
Canadian Newsprint Supply Co.

NICKEL AND NICKEL ALLOYS
The International Nickel Co.

NOZZLES
Link Belt Company

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The Moore & White Co.
Shartle Brothers Machine Co.

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Vapo Systems Co.

PAPER MACHINE DRIVES
Manchester Machine Co.

PAPER MACHINES
Bagley & Sewall Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Moore & White Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

PAPER MACHINE SLICES
Black Clawson Company
E. D. Jones & Sons Co.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
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Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson Sharp Machine Co.
Langston Co., Samuel M.

PARAFFINE WAXES
Moore & Munger
National Wax Company

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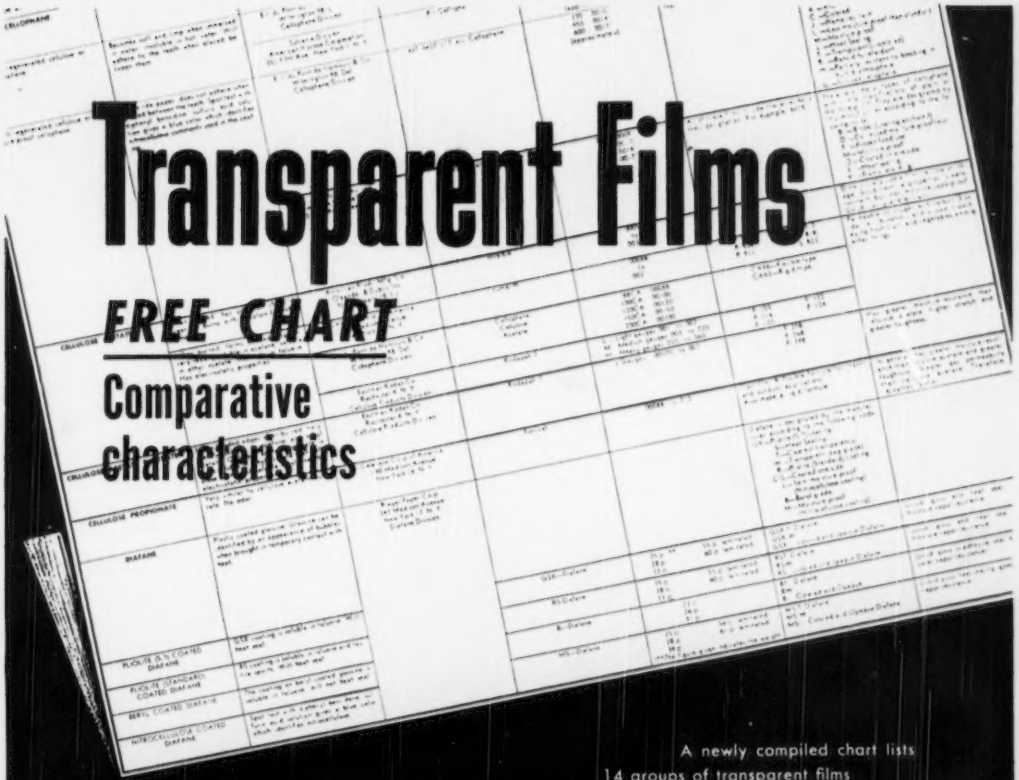

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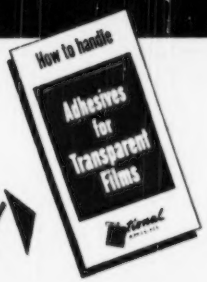

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